

OPERATIONAL LEVEL AIR COMMANDERS:

A SEARCH FOR THE ELEMENTS OF GENIUS

BY

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ABSTRACT

One of the recurring themes of military literature is a search for the qualities and attributes of successful commanders. Carl von Clausewitz argues that some commanders possess a genius for war. Others argue that battle and campaign outcomes are merely functions of luck. Although this debate has largely been confined to war on land and at sea, it clearly has relevance for air warfare as well. Is the outcome of an air campaign a function of luck, or is there a genius for air command? This thesis attempts to discover the elements of genius for air command at the operational level of war. To that end, the paper investigates the theory of genius for war in all three mediums, land, sea and air in order to develop a hypothetical set of traits or characteristics. These traits are categorized into J.F.C. Fuller's cognitive, moral, and physical domains. Three selected commanders are then chosen for an empirical investigation. The standard for this analysis is that each investigated air commander must achieve significant results with limited resources during a an air campaign. This precondition minimizes the likely effects of luck. The commanders analyzed within this study are Air Chief Marshal Hugh Dowding, Adm Raymond A. Spruance, and Gen George C. Kenney. Finally, a comparative analysis identifies the common elements of genius for operational level air commanders. The analysis also compares the identified elements of genius for air command with surface command and draws several conclusions. The thesis concludes with a discussion of implications and a recommendation for potential operational level air commanders to study and reflect upon the nature of this activity through professional education and self study.

ABOUT THE AUTHOR

Darrell Lee Herriges grew up in Hartford, Wisconsin and graduated from Hartford Union High School in 1974. He entered the USAF Academy during the summer of 1974 and graduated in 1978 as a distinguished graduate. His first assignment was in the F-16 Support Program Office, test division, at Wright-Patterson AFB, Ohio until January 1979, when he entered Undergraduate Pilot Training at Williams AFB, Arizona. Upon graduation in November 1979, Second Lieutenant Herriges was assigned a F-4. He went through Fighter Lead-In Training at Holloman AFB, New Mexico, January-March 1980; F-4 Replacement Training Unit at Homestead AFB, Fla., April-November 1980; and was assigned to fly F-4Es at Hahn AB, Germany, November 1980-November 1981. He was then assigned to fly F-4Ds at Torrejon AB, Spain November 1981-May 1983. While at Torrejon, Captain Herriges became a flight leader and served as the squadron mobility officer. His next assignment was at George AFB, California, May 1983-May 1986, where he became a Wild Weasel Instructor Pilot and Assistant Flight Commander. Captain Herriges was selected to attend graduate school and attended MIT June 1986-January 1988. Upon graduation he was assigned to the Office of Special Projects: Secretary of the Air Force, Los Angeles AFB, Calif., February 1988-July 1992. He served as a systems engineer, project manager and Division Chief of Operations Technology. He then completed Air Command and Staff College (ACSC) at Maxwell AFB, Ala., August 1992-June 1993 as a Distinguished Graduate. Following ACSC, Maj Herriges attended the School of Advanced Airpower Studies at Maxwell AFB, Ala. Lieutenant Colonel Herriges' follow-on assignment is squadron commander of the 11th Special Warning Squadron within the 21st Operations Group, 14th Air Force,

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CHAPTER 1 Introduction

According to AFM 1-1, “the science of war...is not only the study of organization, equipment, and technology, it is also the study of man...Human factors should be considered in organizing and employing forces as well as in selecting and educating leaders.”¹ In studying human factors one could seek to determine the characteristics shared by great commanders such as Alexander, Caesar, Frederick, Napoleon, Nelson, Grant, MacArthur, and Patton. Two points emerge clearly: each possessed a genius for war and none was an operational level air commander. In the future this list could include famous air commanders. Perhaps some should be there already.

Why is it important to study this issue of genius in air commanders? The basic reason is that war is a complicated business, and air war is particularly complex. According to Dr Harold Winton of the School of Advanced Airpower Studies (SAAS)

Airpower, by its very nature, is an extremely diverse phenomenon. Its application includes not only the dynamics of air-to-air warfare, but also its intersections with all other forms of warfare. And like other forms of warfare, it is intimately connected with political as well as military realities. These facts dictate that its theory must comprehend its relationships with warfare on land, on sea, and in space as well as war in the air.²

Since it is complicated, it takes people with fully developed aptitudes for it to conduct it well. The sum of these aptitudes is called genius. Genius is so important that Clausewitz opined that it would be easiest to win wars if we simply put a genius in charge, first in general, and then at the decisive point.³ The problem is that while the elements of genius have been relatively well defined for surface warfare, they have not been defined at all for war in the air. Defining those elements is the purpose of this paper.

Background/Significance

In his comprehensive study of airpower during WWI, the historian Lee Kennett concluded that, “Airmen needed mental and physical qualities beyond those required for general military service, though just what those qualities were was unclear before the war--and not

entirely clear after it was over.”⁴ This observation was made concerning airmen in all positions, from airplane mechanic to commander. In the years after WWI, the USAF has developed mechanisms to determine who the technical experts and pilots should be, but the question of understanding operational air command remains unanswered. This assertion was reinforced by a comment from a senior Air Force officer at a recent presentation to the School of Advanced Airpower Studies (SAAS) faculty and students. In describing his initial reaction on being assigned to the theater in which he commands, this officer stated baldly, “I was unprepared for my job.”⁵

Military historians, educators, and theorists have studied the performance of army and naval leaders over the past 2,000 years in search of the “genius of war.” In terms of airpower, however, a mere 80 years of experience defines the boundaries for the modern researcher. It is not, therefore, surprising that this issue has not yet been satisfactorily addressed. This phenomenon is particularly true at the operational level. Within the USAF the operational level of war is only beginning to be understood. Through the writings of Col John Warden, most notably in his book The Air Campaign, the USAF now has a theoretical and philosophical framework for operational level thinking.⁶ The March 1992 edition of AFM 1-1 is also more closely focused at the operational level than previous editions of our basic doctrine. These works do not, however, address what characteristics operational level air commanders should possess nor how they might be educated to win air campaigns. Nevertheless, leaders must be chosen who employ airpower at the operational level of war. The basic question remains: what characteristics or traits should they have?

Scope

This study analyzes operational level air commanders' combat decision-making processes in order to identify those dimensions of character and intellect that influenced the success of an air campaign. It consists of three main parts: theory, historical analysis, and conclusions drawn from both. The theoretical examination assays standard works of cognitive and military theory to define military genius in general terms. Since the existing literature on the genius for air command is very limited, this section focuses primarily on surface warfare. The historical analysis examines key combat decisions of three WWII airpower commanders. The case studies will examine significant decisions of Air Chief Marshal Sir Hugh C.T. Dowding during the Battle of Britain, Rear Adm Raymond A. Spruance at the Battle of Midway, and Maj Gen George C. Kenney during the Papuan Campaign. Why analyze these commanders? First, they were required to make decisions and conduct air operations with relatively limited resources. Second, either independent or supporting air operations played a significant role in the success of the operational campaigns these commanders led. Finally, they are well documented. Significant WWII source documents have been declassified to include the ULTRA and MAGIC intelligence intercepts. This wealth of documentation provides a higher degree of confidence in the findings than more recent conflicts in which classified reports have not been released and the commanders' mental processes are therefore not as subject to detailed examination.

Definitions

To provide a common point of departure, a few definitions are in order. Before defining the term “genius,” it is important to understand that there are a number of dimensions of genius. These include the cognitive or intellectual attributes of genius as well as other attributes in combination with intellectual traits. E. Kretschmer, author of The Psychology of Men of Genius, describes the cognitive dimension of genius as the ability to

arouse permanently, and in the highest degree, that positive, scientifically grounded feeling of worth and value in a wide group of human beings...where the value arises with psychological necessity, out of the special mental structure of the

bringer of value, not where a stroke of luck or some coincidence of factors has thrown it in his lap.⁷

Another useful definition is presented by John Briggs, author of Fire In the Crucible, who defines cognitive genius as the ability to alter in some significant way our perception of a major field of human endeavor.⁸ Likewise, Russell Brain, author of Some Reflections on Genius, describes military genius as

an outstanding intelligence which operates on the minds of men as well as on their material circumstances. As with the artist, however, it is a special blend of feeling with thought that enables his cerebral schemas to reflect the thoughts and feelings of his fellows, and to modify the pattern of events by discerning in them meanings that elude the less gifted....he must take his characters as he finds them and, by his superior knowledge and will, impose his plot upon theirs. He is the artist in action.⁹

Inventor Henry Ford believed that “Genius is one percent inspiration and 99 percent perspiration.” The coupled dimension of genius, or character of genius, is found when superior intelligence is combined with other abilities. Author Russell Brain suggests that “Probably many factors are concerned, and it is the uniqueness of particularly favorable combinations that makes the genius.”¹⁰ This is also the case with military genius.

Clausewitz provides an insightful definition of military genius as, “gifts of mind and temperament that in combination bear on military activity.”¹¹ He further explains that these characteristics are raised to a higher order and do not consist of a single gift while other qualities are missing. One or more characteristics may prevail, but none may conflict with the others. Clausewitz describes the mind most likely to display qualities of military genius as, “...the inquiring rather than the creative mind, the comprehensive rather than the specialized approach, the calm rather than the excitable head.”¹²

The operational level of war refers to the conduct of campaigns. According to Col John Warden, the operational level of war is, “...primarily concerned with how to achieve the strategic ends of the war with the forces allotted. It is the level at which plans are made for the actual employment of land, sea, and air forces; and the level where these forces are used in the course of a campaign.”¹³ Historically, the USAF has operated forces at the strategic level of war (Strategic

Air Command--SAC) and at the tactical level (Tactical Air Command--TAC). The implications of this organization led people to believe that airplanes were either strategic or tactical; and they were used accordingly. However, with the recent reorganization that combined SAC and TAC into Air Combat Command, aircraft are no longer classified as strategic or tactical. Many critical functions for airpower are best explained at the theater, campaign or operational level as is the case for air superiority. Let us examine the function of command at the operational level.

Command is officially defined as

The authority that a commander in the military service lawfully exercises over subordinates by virtue of rank or assignment. Command includes the authority and responsibility for effectively using available resources and for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions.¹⁴

This definition reflects the fact that command is a holistic activity encompassing the cognitive, moral, and physical domain of war. The cognitive domain of command consists of the following functions: gathering information on the status of one's own forces, the enemy, and environmental factors; storing, retrieving, classifying, correlating, distributing, and displaying this information; devising an estimate of the situation; defining desired and feasible objectives; formulating alternative courses of action; deciding on a course of action; formulating and issuing orders to subordinates; and monitoring execution of those orders.¹⁵ Helmuth von Moltke described the human element of command as one of the tasks of strategy when he said, "The...commander [must have]...both mental faculties and character...for this free, practical, artistic activity [command]...the continued development of the original leading thought in accordance with the constantly changing circumstances."¹⁶ The holistic nature of command was further described by Roger Nye, author of The Challenge of Command, who defined command as the ability within a military organization to think, make judgments, and decide; feel and moralize; and act and wield power.¹⁷ Finally, there are two closely dependent aspects of command: preparing for war and war itself. Although the way in which a given commander handles his preparations for war may define his possible options and hence influence his success or failure, the focus of this study is on

actual warfighting. In short, command conveys authority and with that authority imposes wide-ranging responsibilities. This study will focus on the cognitive and human portions of those responsibilities.

Methodological Limits of the Analysis

Since command is a complex and personality-dependent activity, its study requires the assessment of the impact of personality upon people and events. The evidence available to the researcher, however, only reveals a portion of a commander's true personality. Neither the mental processes that take place in a commander's mind, the tone of the commander's voice, nor the look upon his face is generally recorded. Frequently the only evidence is a written record.¹⁸ Inevitably this evidence will be biased from the perspective of the author. Biographers may be unduly influenced by their subject or they may present evidence to sell books.¹⁹ Commanders' personal memoirs and diaries almost invariably present their own versions of command decisions, which may be worded to make that decision appear slanted in a favorable light. Official reports and unit histories frequently reflect organizational bias. Despite these limitations and only partial glimpse into personalities, written evidence when properly correlated and evaluated, may provide some clues to help identify elements of genius.

A second limitation is that this paper only addresses three operational level air commanders. This limited sample size was dictated by the length of the study. It may be possible, however, for other researchers to expand the scope of the study by examining other airpower commanders and, as new documents become available, pull the analysis forward to more recent conflicts.

Finally, this study does not investigate cases in which the commander failed to accomplish the mission. Although the distinguished military commander Napoleon lost campaigns, he was identified as a genius based upon his numerous successful exploits. This recognition is given in accordance with Moltke's observation, "Success, above all, obviously determines the reputation of a...commander. [However] Even the best man fails against the irresistible power of circumstances, and even the average man must endure this power."²⁰

Nevertheless, there are not many Napoleons and the most logical reason not to consider unsuccessful campaigns is based on a warning from Clausewitz

But the effects of genius show not so much in novel forms of action as in the ultimate success of the whole. What we should admire is the accurate fulfillment of the unspoken assumptions, the smooth harmony of the whole activity, which only become evident in final success. The student who cannot discover this harmony in actions that lead up to a final success may be tempted to look for genius in places where it does not and cannot exist.²¹

Therefore, this study will focus on operational commanders who have demonstrated success with constrained resources.

Hypothesis

One question that must be addressed early on is the extent to which the elements of genius for operational level air commanders are similar to or dissimilar from those of the operational level commanders of surface forces. From a theoretical viewpoint, there are three possibilities: all elements are synonymous, all elements are completely different, or there is some overlap among the elements. The hypothesis of this study is that the elements of genius for operational air commanders have a significant overlap with those of land and sea commanders with a few noticeable exceptions. First, the air commander's *coup d'oeil* is different than the land and sea commander's because of the expansion of space and the compression of time. Events normally take place in a wide three dimensional manner and happen more quickly for the air commander than for surface commanders. Another possible difference concerns the effect that airpower's marked sensitivity to technology influences the qualities of mind and personality required of operational level air commanders.

Methodology

To determine the elements of genius of operational level air commanders, this study will investigate theoretical analyses of genius in general and military genius in particular, compile a select number of traits that are potential elements of genius, investigate three operational air commanders, analyze the observed evidence, and draw conclusions. The conclusions drawn from

this analysis appreciate the, "...complex interaction of thought and action that constitutes the process of command."²² The specific stages of the investigation are outlined as follows:

Step One) Ascertain the possible elements of genius for command in general. This step will provide a starting framework for the case studies. Clausewitz and others who have studied the characteristics of genius in fields other than the military mention the fact that great accomplishments are usually created when cognitive genius is combined with other characteristics that depend upon the particular field of endeavor. Hence, this step will include listing those necessary characteristics which combine with cognitive genius to attain success at the operational level of war. These elements may fall within the cognitive, physical or moral spheres defined by J.F.C. Fuller. As part of the search for possible elements of genius, this study will investigate those required in land, sea, and air operations. The results of this step are incorporated into chapter 2. This step does not limit the potential elements only to those listed before the empirical analysis begins, but it provides a base point for future reference.

Step Two) Establish a criterion for successful command of the air at the operational level of war. The essence of this criterion is the ratio of results achieved to resources available. The selection of air commanders will lie on a continuum within this definition. The goal of this selection process is to find commanders with a high ratio of results achieved to resources available. This constraint is designed to minimize the effect of luck or overwhelmingly superior resources in a given command situation.

Step Three) Using the criterion from Step Two, select three operational level airpower commanders.

Step Four) Investigate each selected commander for evidence of demonstrated traits that influenced operational consequences, particularly those traits that seem to be critical to success or

failure in a given operational situation. Each case will employ the following framework: description of the situation, including the resources available; the operational plan; plan execution; the operational results; and traits in the cognitive, moral and physical domains demonstrated by the commander to which specific operational consequences can be linked.

Step Five) Analyze and sort the evidence using the following criteria:

a) Each element of genius for air command must be clearly documented within the individual commanders.

b) A trait must be demonstrated during a command situation by at least two of three air commanders to qualify as a potential element of genius. If the third air commander does not demonstrate the trait under consideration, the following rule will be observed: If there is evidence clearly indicating that the odd commander possesses a trait that is opposite of the trait in question, then the trait is not an element of genius.

Step Six) Draw conclusions based on evidence and analysis.

¹ AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, Volume 2, March, 1992, 27.

² Dr Harold R. Winton, "A Black Hole in the Wild Blue Yonder," Air Power History (Winter 1992): 32.

³ Carl von Clausewitz, On War, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 514.

⁴ Lee Kennett, The First Air War 1914-1918 (N.Y.: Free Press, 1991), 22.

⁵ Senior Air Force Officer, Presentation to SAAS, Maxwell AFB, Ala., 17 February 1994.

⁶ Col John A. Warden III, The Air Campaign (Washington: Pergamon-Brassey's International Defense Publishers, 1989), xvii.

⁷ Russell Brain, Some Reflections on Genius (Philadelphia: J.B. Lippincott Company, 1960), 9.

⁸ John Briggs, Fire in the Crucible: The Alchemy of Creative Genius (New York: St. Martin's Press, 1988), 12.

⁹ Brain, 16.

¹⁰ Ibid., 22.

¹¹ Clausewitz, 100.

¹² Ibid., 112, 136.

¹³ Warden, 2.

¹⁴ JCS Publication 1-02, Department of Defense Dictionary of Military and Associated Terms (Washington D.C.: U.S. Government Printing Office, 1 December, 1989), 77.

¹⁵ Martin Van Creveld, Command in War (Cambridge, Mass.: Harvard University Press, 1985) 7-8.

¹⁶ Helmuth von Moltke, Moltke on the Art of War: Selected Writings, ed. and trans. Daniel J. Hughes and Harry Bell (Novato, California: Presidio Press, 1993), 46-7.

¹⁷ Roger H. Nye, The Challenge of Command (Wayne, N. J.: Avery Publishing Group Inc., 1986), 19.

¹⁸ Van Creveld, 262-3.

¹⁹ Dr David R. Mets, "Battle, Bomber Barons and Biography: The Great Man Approach to the Study of War," Unpublished article available from the author.

²⁰ Moltke, 46.

²¹ Clausewitz, 177-8.

²² Van Creveld, 12.

Chapter 2 Theory

This section establishes the theoretical foundation for analysis. It is based on the proposition that the operational level military genius must master the operational art. A logical starting point for this investigation is to establish the parameters of operational art in general and then establish specific parameters for air command. After exploring the operational art, this section will investigate the theory of genius in general and then examine the characteristics applicable to a military commander. This study will examine characteristics within three spheres of human experience as defined by J.F.C. Fuller: the cognitive, or intellectual domain; the moral or human domain; and the physical or tangible domain. This section will conclude with a summary of the potential elements of genius for operational level air commanders.

Elements of Operational Art

The common elements of operational art are space, time, force, strategic context, and tactical realities.²³ Although the operational level of war may have had its origins in the early nineteenth century, Imperial Russian forces in 1914 were the first warriors officially to consider this level of command as a bridge between the strategic and tactical levels. “In the Soviet view, this event marked a major step forward in the development of the military art.”²⁴ Since WWI the elements of operational art have remained unchanged, but their dimensions have undergone significant modifications.

The mission, friendly forces, enemy forces, and available weapons define the boundaries of operational space. Physically, this space has three dimensions: length, width, and height.²⁵ Prior to WWI, the operational commander was concerned exclusively with surface warfare in his theater of operations. During WWI the vertical dimension came upon the scene with the introduction of aircraft and submarines in significant numbers. In general, all of the physical dimensions have expanded over time with advances in technology, such as the use of aircraft carriers, drop tanks or air refueling to extend the range of aircraft, and the deployment of the nuclear-powered submarines or satellites to extend the vertical dimension.

The second dimension of the operational level of war is time. Time has always been a valuable commodity in war. However, technologically-induced time compression has significantly altered this component of operational art. Before the advent of aircraft, armies were moved into a theater in days. During WWII entire divisions were air-dropped into new areas in a matter of hours. Some of today's weapon platforms travel at twice the speed of sound. In short, because present weapons and forces move more quickly, they allow less time for a commander to process information, prepare alternate courses of action, and make decisions. "With each new generation of weapons, the commander needs knowledge of a rapidly expanding battlefield in less and less time than ever before."²⁶ Hesitation at today's operational level of combat can lead to immediate failure. Time also draws the deadline for a commander to accomplish his mission.²⁷

Force at the operational level is composed of both friendly and enemy capabilities. Essentially, available force defines one of the boundaries of one of the means to achieve operational ends. Napoleon worried about the placement of artillery batteries with limited range and effect. These considerations were still prevalent during the trench warfare of WWI. Concentration of mass or firepower at critical points required numerous pieces of equipment. Today, forces are deadly and mistakes at the operational level of war can lead to the deaths of hundreds of troops with a single weapon. For example, one accurately delivered cruise missile can eliminate an entire battalion in an assembly area or sink an entire ship from ranges well over 50 miles. Today, aircraft-delivered precision guided munitions can destroy targets which took hundreds of sorties during WWII.

The commander must always be aware of the strategic context within which he is fighting. As Clausewitz has suggested, "The political object is the goal, war is the means to achieve it, and means can never be considered in isolation from their purpose."²⁸ Yet, this political goal may change during the course of the conflict thereby altering the strategic context. Again, Clausewitz theorized that since political objects are influenced by events and probable consequences, they will change during the course of a conflict.²⁹ Clearly, this context may define the nature of the war, such as conventional warfare or low intensity conflict. Strategies must be

based upon the nature of the conflict and the commander must plan and execute operations with these considerations in mind. Clausewitz summarized these ideas in the following manner

No one starts a war--or rather, no one in his senses ought to do so--without first being clear in his mind what he intends to achieve by that war and how he intends to conduct it. The former is its political purpose; the latter its operational objective. This is the governing principle which will set its course, prescribe the scale of means and effort which is required, and make its influence felt throughout down to the smallest detail.³⁰

In brief, the operational level commander must consider the changing strategic context of his operations throughout the course of his campaign.

The tactical realities of operational art suggest that, "...a key to success in war and other conflicts is the ability to rapidly adapt to the changing situation and to exploit transient opportunities rather than strictly adhering to a predetermined course of action."³¹ In order to win campaigns, a commander must win battles; therefore, the operational commander must be sufficiently aware of tactical realities to judge accurately the chances of winning and losing as he decides to deny, accept, or force battle. In making his calculations of how best to employ his forces within the time and space available, the operational commander must be just as aware of the tactical realities in his theater as he is of its strategic context.

These elements of operational art are interactive. For example, in terms of time, the element of space is constantly changing at any given moment due to the dynamics of operations. An example of this dynamic parameter is the time-sensitive mission of the Wild Weasels suppressing enemy air defenses within airspace over selected theater targets during a three to four minute window as strike aircraft accomplish their mission. The operational characteristics of a portion of the theater space changes for the three or four minutes the Wild Weasels lower the threat to friendly aircraft in the target area.

Specific Elements of Operational Art for the Air

In theory, there are specific elements or aspects of operational art that are more prominent within the air medium. Part of the objective of this study is to identify these unique elements and find the role they play in operational success or failure.

According to AFM 1-1

In the final analysis, elevation and freedom of movement are the keys that distinguish the aerospace environment from the surface environments and bind air to space. Elevation is the characteristic that does not change in kind--only in amount--as one ascends from air to space. Freedom of movement and speed underscores the military usefulness of exploiting air and space.³²

Essentially, the space dimension of operational art has been given a virtually unlimited third dimension by the advent of aerospace technology. This extension provides a greater perspective than surface warfare and increases the potential for speed, range, and maneuverability. The net result of these advantages is the unique flexibility of aerospace power to concentrate rapidly against any surface target.³³

The operational element of time in the air is compressed when compared to surface level operations. In general, operational level air commanders have less time for making decisions than do their surface counterparts. In less than three hours, Israeli airstrikes against the Egyptian air forces during the 1967 war attacked 19 air bases and destroyed 300 of 340 combat aircraft. Attack waves were spaced at 10 minute intervals with ground turn-around times of eight minutes.³⁴ At Midway 75 percent of Admiral Nagumo's carrier force was destroyed by airpower in five minutes.

Within the element of tactical realities, airpower tends to be more sensitive to technological change than land or surface sea power. Small technological changes can have a major impact on airpower effectiveness.³⁵ For example, the Talon Shield Program is broadcasting electronic emitter ranging data to airborne aircraft that enables them to employ High Speed Anti-Radiation Missiles (HARM) missiles while remaining at low level and not within line

of sight of the emitter.³⁶ This small technological improvement will enhance aircrew survivability in a hostile threat environment and allow less capable aircraft, compared to the F4-G Wild Weasel, to employ HARM missiles.

Genius

Many commentators believe that intense mental activity is the essential preparation required for the demonstration of genius. According to Jules Henri Poincaré, a noted French mathematician, “Genius strikes most often in the prepared mind.”³⁷ He based this statement on his own experiences. “For fifteen long days Poincaré strove to prove that there could not be any so-called Fuchsian functions. Then one evening he drank black coffee and could not sleep. By the next morning, contrary to his original idea, he had established a class of Fuchsian functions.”³⁸ Poincaré explained these sudden inspirations as products of the free range of subliminal activity. He thought only some ideas are called to pass the threshold, those that respond to order and harmony. Louis Pasteur, the noted French chemist, postulated a similar notion when he said, “Chance only favors invention for minds that are prepared for discoveries by patient study and persevering efforts.”³⁹ Both of these observations are in accord with the philosophies of Count Friedrich Wilhelm and Gerhard von Scharnhorst who believed that

the profession of arms was a continuous process of development that could not be mastered by simply learning existing techniques. Additionally, the officer could not develop his analytical skills, insights, imagination, and judgment if he was merely trained in routine duties. The talents, abilities, and habits of thought which the officer needed in combat could in large part be acquired only through the broader avenues of learning outside his profession. Unlike other vocations, the profession of arms demanded a broad, general education for its mastery.⁴⁰

Thomas Edison “...sensed clearly the dependence of invention and discovery upon the total accumulation of knowledge, including that which seems forgotten.”⁴¹ He noted that Newton had been at work on the problem of gravitation for many years before he “accidentally discovered” that natural law. An example of a well-prepared mind that exhibited traits of military genius is reflected in the experiences of George S. Patton, Jr. He was a voracious reader of military books

throughout his entire lifetime. Additionally, he reflected on what he read and kept a personal diary starting in the summer of 1905.⁴²

Although preparation may be considered a necessary condition for cognitive genius, it is not sufficient. Other characteristics must be present in one's personality to bring genius to fruition. John Briggs describes a key characteristic of creative genius when he states, "They're always ready to notice and amplify into insight some accident of their environment everybody else thinks is trivial or fails to notice."⁴³ This characteristic was an inherent part of Edison's personality and is reflected in his own words

Look, I start here with the intention of going there (drawing an imaginary line) in an experiment, say, to increase the speed of the Atlantic cable; but when I have arrived part way in my straight line, I meet with a phenomenon, and it leads me off in another direction--to something totally unexpected.⁴⁴

Edison discovered the phonograph in such a manner when he was actually attempting to record and reproduce sound for a telephone repeater. This trait was also recognized by Maj Gen Aubrey S. "Red" Newman, USA, a profuse writer on the human element of war, when he described the most important duty of a general officer was to, "...reflect on matters he should be working on that nobody else has thought about yet."⁴⁵

A creative genius also thrives on mistakes as part the creative process. Whereas most people are discouraged when they make mistakes, the creative genius will seize the mistake as a way to finding new horizons.⁴⁶ In some respects, failure would only drive a genius further to find new ways to success if he was permitted to do so. This is the nature of genius as described by John Briggs, "Contradictory feelings are experienced not as mere conflict or ambivalence, but as possibilities, potentials, mystery, openness."⁴⁷ This perspective is known as having omnivalence. This trait is also described by Radoslav Tsanoff, author of The Ways of Genius, as he describes scientific genius, "But the great minds proceed through and beyond the accumulation of particular facts to the theoretic contemplation of universal principles, beyond the traditional explanation of part of the evidence to the interpretation of the whole."⁴⁸ Although many people

may possess some elements of creative genius, true genius appears to be rare because most people do not allow a sustained, creative, self-organizing structure to form over the course of their lifetime.⁴⁹

In general, cognitive genius requires preparation of one's mind in combination with having other personality characteristics that stimulate the mind. The preparation seems to include orderly and disciplined learning or experience outside of one's profession. The demonstration of genius then seems to follow from reflection on the problem under consideration. Minds that exhibit genius proceed beyond the mere accumulation of facts to contemplate theoretic universal principles that go beyond the normal explanation of part of the evidence as it relates to an interpretation of the whole. Lastly, creative genius seems to thrive on mistakes, as if they open new horizons for exploration. It is now necessary to move from the subject of genius in general to genius for war in particular. However, before reviewing the theory for each medium, an observation of Dr I.B. Holley is worth noting that pertains to all mediums.

Professor I.B. Holley suggests that objectivity may be a necessary trait for successful air as well as surface command. Holley describes objectivity as follows:

To be objective one must cultivate the habit of intellectual self-reliance, thinking a problem through for oneself....objectivity requires the cultivation of a judicious temperament, a healthy skepticism toward all proposals and propositions...Objectivity requires a disciplined mind, a mind trained first in the art of acquiring evidence and then in techniques for assessing that evidence.⁵⁰

Holley elaborates on this characteristic when he says that objectivity, “requires a persistent intellectual curiosity, a voracious desire to know more.”⁵¹ This relates back directly to John Briggs' discussion of genius in general as people who see conflict or uncertainties as an opportunity or challenge. An excerpt from his book may clarify the concept, “The pervasiveness of omnivalent 'more'ness for creators is implied in experimental evidence gathered in a University of Chicago study that showed that the higher the level of the creator, the more likely (s)he is to feel that more could be done to improve the work.”⁵²

Genius for Land Command

Clausewitz was the first military theorist to attempt a systematic description of military genius. He began with the proposition that “Genius consists in a harmonious combination of elements, in which one or the other ability may predominate, but none may be in conflict with the rest.”⁵³ Cognitive elements of military genius included a sensitive and discriminating judgment, *coup d'oeil*, and presence of mind. Within the moral sphere, he identified the traits of courage, determination, and strength of will as integral elements. Clausewitz did not emphasize traits within the physical sphere, but he did mention the fact that one must have a certain strength of body and soul to overcome the exertion of war.⁵⁴ Before proceeding, it is essential to characterize the necessary elements of the cognitive and moral spheres.

All of the elements within the cognitive domain; judgment, *coup d'oeil*, and presence of mind, are necessary to deal with the ubiquitous elements of chance and uncertainty in war. Clausewitz described a sensitive and discriminating judgment as being a skilled intelligence to ascertain the truth. This element is critical because war is full of uncertainty, and Clausewitz postulated that three fourths of the factors on which war is based are plagued by it.⁵⁵ This philosophy is also reflected in the writing of Morris Janowitz, author of The Professional Soldier, when he described, “...the very senior generals are a small elite within an elite, made so by their independent-minded ability to rise above conventionality and established doctrine.”⁵⁶

Another cognitive element that seeks to counter the effects of uncertainty and chance is *coup d'oeil*. Clausewitz defined this gift as, “...an intellect that, even in the darkest hour, retains some glimmerings of the inner light which leads to the truth.”⁵⁷ Although the term literally refers to the strike of the eye, it is not solely a visual concept. During the Napoleonic era, when the cavalry was often the decisive factor, a rapid and accurate decision was based on an evaluation of time and space. This included an evaluation of the terrain in the imagination of the commander. Clausewitz further explained the term as being the quick recognition of a truth that the mind would ordinarily miss or would perceive only after long study and reflection.⁵⁸

The final cognitive element discussed by Clausewitz is presence of mind. He defined it simply as an increased capacity to handle the unexpected. This presence does not have to be exceptional, it must simply be adequate to meet the encountered demands. It is not clear as to whether this characteristic is a part of one's intellect or whether it is a function of steady nerves.⁵⁹ However, he did point out that neither can be lacking. This discussion now branches to look at elements within the moral sphere.

Within the moral sphere Clausewitz identified three central characteristics: courage, determination, and strength of will. Each of these elements of genius is necessary to overcome the realm of danger within war.⁶⁰ These elements work in harmony with the cognitive and physical elements of genius.

Clausewitz selected courage as the first requirement beyond intellectual powers for military genius. He described three different types of courage. First, is the courage to accept responsibility or courage in the face of moral danger. This is also referred to as *courage d'esprit*. Richard Simpkin, author of Race to the Swift, identifies this as the required type of courage at the operational level, "...to keep his judgment unclouded when forced to accept short-term setbacks for the sake of long-term aims, or to follow a course which he knows will cause heavy casualties among men who trust and respect him."⁶¹ The next two types of courage are those necessary in the face of personal danger, one being permanent and the other being temporary. Permanent courage may be due to indifference to danger or a result of habit. This type of courage is second nature to a person and is therefore more dependable than temporary courage. The third type of courage is garnered from ambition, patriotism or enthusiasm. Essentially, this courage is a temporary feeling or emotional state that stimulates the mind. It is also characterized by boldness and will often achieve more than permanent courage, but it can also obscure one's mind and lead to unclear thinking. In Clausewitz's construct, the strongest form of courage is a combination of the second and third types.⁶²

Clausewitz defined determination, his second moral quality of great commanders, as the courage to follow the inner light recognized by *coup d'oeil* wherever it may lead. It is important

to understand that this element of genius is engendered only by a mental act, a courage based on intellect. The mind tells man that boldness is required and hence gives direction to his will. In Clausewitz's construct, one's mind actually employs the fear of wavering and hesitating to suppress all other fears. Given this mind set, determination dispels doubt resulting from reflection.⁶³ This characteristic was also explored by Barbara Tuchman, author of Practicing History. In her studies of commanders from the Middle Ages to WWII, she found the primary quality of all commanders was resolution. She defined this term as, "the determination to win through, whether in the worst of circumstances merely to survive, or in a limited situation to complete the mission; but whatever the situation, to prevail."⁶⁴

The third element within the moral sphere is that of strength of will. Clausewitz referred to the ability to overcome danger, exertion, uncertainty, and chance when the machinery of war encounters resistance. The overriding purpose of the commander's will is to, "...rekindle the flame of purpose in all others; his inward fire must revive their hope....Such are the burdens in battle that the commander's courage and strength of will must overcome if he hopes to achieve outstanding success."⁶⁵ This description is analogous to one's ability to motivate others under all circumstances.

He describes four aspects of the characteristic strength of will with the terms: strength of character, firmness, energy, and staunchness. He defined strength of character or mind as the ability to maintain self-control and keep one's head during times of emotional stress. This element of genius is actually an emotion that serves to balance strong feelings without destroying them. The emotion which provides this balance is human dignity or the need to act rationally at all times. In short, strength of character consists of having powerful feelings and maintaining one's balance in spite of them.⁶⁶ Clausewitz suggests that strength of character can degenerate into obstinacy. He warns this may happen if one is reluctant to admit when they are wrong. The transition occurs as soon as a man resists another point of view not from superior insight, but because he objects instinctively.⁶⁷ Firmness is another aspect of strength of will which is closely related to strength of character. The term refers to men whose views are stable and constant.

These views may be based on opinions, principles, attitudes, sudden insights or any other mental force. However, they must be views based on fundamental principle derived from reflection and hence be relatively immune to changes of opinion.⁶⁸ It is this type of view that strength of character hopes to maintain unless forced to change by a clear conviction. Energy is the aspect of strength of will that seeks to arouse soldiers to inspired action. It varies in proportion to the strength of its motive, whether it came from an emotional base or intellectual conviction. Great energy only flows from an emotional base and the strongest emotion is one based on ambition or a longing for honor and renown. Clausewitz also described it as an inventiveness or competitive enthusiasm that vitalizes an army to make it victorious. Ambition created the most powerful inspiration in Clausewitz's view.⁶⁹ The final aspect of strength of will is staunchness or the will's resistance to a single blow. Staunchness may result from strong emotion but not from the intellect. It is important to distinguish this term from endurance which is the will's prolonged resistance. Intelligence can help sustain endurance, not staunchness.⁷⁰

The only physical characteristic that one must exhibit is an ability to withstand the rigors of war. The stress encountered by a commander will be different than that experienced by his men, but it will tax his physical as well as his emotional stamina.

This completes the review of the theory of genius for land warfare. The elements of genius for land command are contained within the cognitive, moral, and physical domains. The cognitive elements include: judgment, *coup d'oeil*, and presence of mind. The moral elements are moral courage, personal courage, determination, and strength of will. The review of theory continues with a look at genius for sea command.

Genius for Sea Command

The purpose of investigating genius for command at sea is to identify similarities and differences between operational level command on land and at sea. This analysis may sensitize us to similarities and differences between operational level command on the surface and in the air. Sir Julian Corbett was the first naval theorist to attempt a systematic analysis of sea power at

what we today would classify as the operational level of war, so the search continues with a look at his writings.

Building on Clausewitz's base regarding the relation between war and policy, Corbett argued that, "Naval Strategy does not exist as a separate branch of knowledge. It is only a section of a division of the art of war....The true method of procedure then is to get hold of a general theory of war, and so ascertain the exact relations of Naval Strategy to the whole."⁷¹ This viewpoint suggests a starting point that assumed an overlap of land and sea warfare. Clausewitz's work, however, had to be adapted to the unique demands of the sea. "They (soldiers) are the real pioneers, and their methods must be in the main our methods, but what we have to remember is that the country we have to travel is radically different from that in which they acquired their skill."⁷² He identified two cogent differences between the land and sea mediums: the nature of lines of communication and concentration of force.⁷³

Corbett suggested that lines of communications (LOCs) at sea tend to determine lines of operation. He pointed out that on land roads and obstacles define the possible routes of travel. These constraints do not exist on the open sea, and freedom of movement is only limited by areas inaccessible to ships. He also argued that at sea LOCs often run parallel to or are the same as those of the enemy, whereas the land LOCs of opposing forces generally run in opposite directions. He asserted that, "This peculiarity is the controlling influence of maritime warfare...[Therefore] at sea...when the great lines are common to both, we cannot defend our own without striking at the enemy's."⁷⁴ In terms of strategy the nature of LOCs at sea suggests, "The primary object of the fleet is to secure communications, and if the enemy's fleet is in a position to render them unsafe it must be put out of action."⁷⁵ In other words, while on land lines of communication are only important as a means to support the force, at sea security of the lines of communication itself is the most frequent object of operations.

The second difference lies within the area of concentration of force--naval forces of belligerents can relatively easily be removed from the area of operations. This is less possible on land, except in terms of guerrilla warfare where the enemy forces blend into a society or seek

refuge in a sanctuary. In a typical conventional campaign, land warfare suggests concentrating force against the enemy troops. This general rule cannot be blindly applied to a conventional sea campaign. Corbett modified the concept and suggested that since the defense is generally the stronger form of war, "...it is *prima facie* better strategy to make the enemy come to you than to go to him and seek a decision on his own ground."⁷⁶ What he advocated as a modification to explicit concentration of forces was to keep naval forces in positions so that they can be united at the appropriate time and place. However, he pointed out that it is more difficult at sea to identify the location of the decisive point than it is on land due to the practically unlimited surface mobility of all naval forces.⁷⁷

So, how do these differences relate to genius for sea command at the operational level of war? The most significant implication is a resulting change in the evaluation of time and space when making decisions. In essence these differences create a new calculus for the sea commander's *coup d'oeil*. The lack of obstacles at sea and resulting freedom of movement add to the complexity of evaluating time and space and hence increase the challenge for the sea commander's intellect.

Closely related to *coup d'oeil* is the characteristic of presence of mind or having the intellectual capacity to deal with the unexpected. Complete freedom of movement in combination with the enemy's capability to withdraw from a campaign expand the number of possible events for the commander to consider. These added possibilities suggest new areas of reflection and study for him in order to make rapid and accurate decisions. The changes in time, space, and strategy also influence the behavior of men under one's command. Therefore, it is appropriate to consider implications for characteristics within the moral domain.

If an enemy chooses to avoid entering a campaign through maneuver, the men under one's command may become tired and begin to lose strength of will due to an enemy's elusiveness.⁷⁸ In this case, the commander's strength of will must meet the challenge and inspire his men to continue. This is where the commander must have the proper focus and be able to communicate this message to his men. As Corbett suggested, the purpose of the fleet is to secure

communications which implies that it may not always be necessary to seek out and destroy the enemy.⁷⁹ This dialectic relationship between the direct and indirect application of force at sea clearly requires not only a sophisticated intellect, but also the ability to communicate shades of meaning and subtleties to one's subordinates.

Another aspect of genius for sea command that is different from land command is the requirement for a more well-developed sense of discriminating judgment due to the independent nature of sea command. Once the sea commander has sailed over the horizon, he may have to make decisions and judgments on his own if communications are lost with headquarters. This was clearly the case before radios were invented and this spirit of independence remains in today's Navy.⁸⁰ The commander must be aware of the political implications of his decisions, such as was the case during the Cuban Missile Crisis when an error in judgment could have started WWII.

Technology also plays a key role in expanding the complexities of genius for sea command at the operational level. The advent of the submarine, aircraft carrier, and satellites have complicated the time and space dimensions of sea operations. In terms of physical dimensions, airplanes and satellites have expanded the vertical dimension of space up, while submarines have expanded it down. Likewise, a commander must consider the operational space of his enemy in terms of technological capabilities, especially the range of enemy weapon platforms. The added variables of stealth-cloaked submarines or airplanes raise the level of uncertainty for the sea commander. All of these technological factors have complicated the commander's *coup d'oeil*. Also, technological breakthroughs, such as finding a method to defeat stealth technology could be vital to a sea commander. Surely the unexpected implications of technological leaps will require a greater presence of mind for the sea commander.

One last factor to consider stems from Julian Corbett's opening proposition: the capability of a commander to work effectively with the land commander so as to achieve the operational objectives which support national strategy. He elaborates on this point as follows

The paramount concern, then, of maritime strategy is to determine the mutual relations of your army and navy in a plan of war. When this is done, and not until then, naval strategy can begin to work out the manner in which the fleet can best discharge the function assigned to it.⁸¹

Yet it is important to note that Corbett saw cooperation as a mutual concern that depended upon the situation. He reflected this concern when he stated

The problem of such co-ordination is one that is susceptible of widely varying solutions. It may be that the command of the sea is of so urgent an importance that the army will have to devote itself to assisting the fleet...on the other hand, it may that the immediate duty of the fleet will be to forward military action ashore before it is free to devote itself whole-heartedly to the destruction of the enemy's fleets.⁸²

This study will consider an ability to work in concert with other commanders as a separate element of genius within the cognitive domain. The key defining characteristic of this ability is a capability to achieve operational objectives in coordination with forces from another medium. Implicit characteristics within such a capability include an outstanding technical understanding of one's own force capabilities, at least a very good working knowledge of force capabilities in other mediums, the flexibility to consider both direct and indirect force application within all media of warfare, and a willingness to consider the viewpoints and suggestions of other services.

Hence, the theory of genius for sea command suggests that there is a significant overlap with land genius, but that there are cogent differences as well. Corbett pointed out the differences in the nature of LOCs and the complex nature of force concentration for sea command. Both factors challenge the sea commander's *coup d'oeil* and presence of mind in more complex ways than that of the land commander. Finally, Corbett has identified a new potential characteristic of cognitive genius, the ability to work in concert with other commanders in other media to achieve operational objectives. Also, technological advancements have changed the time, space, and tactical realities for seapower operations, thereby creating additional challenges for the sea commander. Several of these observations appear to have relevance when one considers genius for air command.

Genius for Air Command

The purpose of this study is to identify the elements of genius for operational air commanders. Very little has been written on this topic, perhaps because airpower is still relatively immature when compared with surface command. This lacuna compels us to begin by defining the operational characteristics of the air medium itself.

As mentioned in chapter 1, according to AFM 1-1, the ability to operate from an elevation above the earth is the single quality that distinguishes aerospace forces from surface forces. Elevation provides four advantages: a broader perspective, higher speeds due to unrestricted movement, greater potential range or access to the earth's surface, and three dimensional maneuverability. These advantages combine to provide greater mobility and responsiveness than is possible with surface forces. The relative advantages in mobility and responsiveness produce operational flexibility. The two most important differences of this flexibility when compared to surface forces are the ability to concentrate force anywhere rapidly and to attack directly an enemy's political, military, economic or social infrastructure.⁸³

Group Captain Andrew Vallance of the Royal Air Force asserts that “airpower has distinct and specific characteristics: positive, negative and conditional.”⁸⁴ He lists the positive characteristics as speed, mobility, and flexibility and describes the same advantages promulgated in AFM 1-1.

From the negative perspective, he asserts that airpower is an impermanent form of military force. He supports this conclusion by stating that aircraft cannot stay airborne indefinitely. Aircraft can be air-refueled, but it is not possible to rearm or service an aircraft in flight. Therefore, he concludes that airpower effects are transient, and to sustain those effects, operations have to be repeated.⁸⁵

Another negative characteristic of airpower operations is its sensitivity to weather. First, not all aircraft are designed as all-weather machines. This fact limits the operational effectiveness of many of today's aircraft, especially during weapon delivery. Some of the effects of bad weather have limited the effectiveness of fighter operations in Bosnia-Herzegovina. Another

limitation created by weather is takeoff and landing weather minimums for each aircraft. Low ceilings can effectively ground some aircraft types. Excessive cross winds can also make takeoff or landing impossible. Although some aircraft are described as having an all-weather capability, even these aircraft have limitations. Severe weather, such as thunderstorms with hail can damage most, if not all aircraft. Weapons carried on external pylons or in flight can also be damaged by severe weather. Clouds or fog in the target area can degrade challenge or limit the employment of optically-guided weapons as well.

Finally, Vallance suggests that airpower has some conditional characteristics. The first such characteristic is that of depending on bases. If your airfield is vulnerable to enemy attack at low cost to the enemy, it is a liability to a commander. However, if an airfield is survivable then it is advantageous to operate from an established base because it simplifies logistics, sustainability, and rearmament capabilities. His final conditional characteristic is that airpower tends to be more sensitive to technological change than sea power or land power.”⁸⁶ (An exception to this assertion may be the stealth-cloaked submarines of the US Navy.) Small changes in technology such as simply changing the frequencies of surface to air missiles can radically change the air commander's decision calculus. This calculus includes aircraft and weapons that travel in excess of speeds of 1,000 miles per hour, cruise missiles that fly in any weather to precise impact points, stealth aircraft that are difficult to detect with radar, and satellites that have highly sophisticated sensors. Unexpected technological changes in this medium can have devastating effects.

There are a number of implications that follow from the total analysis for the genius of air command at the operational level. First, the air commander's *coup d'oeil* and presence of mind will face greater challenges than his surface warfare counterparts due to the compression of time and the expanded nature of space. In other words, these factors complicate an air commander's decision-making process by giving him less time with a more complex problem to evaluate. General Cushman describes these challenges in his book Thoughts for Joint Commanders, as follows, “The JFACC's [Joint Force Air Component Commander] command task thus differs

from that of an Army or joint force commander. More air- and weapons-minded, faster moving, more detailed, it calls for processes, decisions, expertise, and insights of another nature. The JFACC responds to the mission...by making an air estimate of the situation in operational terms.”⁸⁷ In terms of the commander's presence of mind, he will have to adjust his actions rapidly based upon new information. Additionally, the air commander may have to consider the implications in a strategic context of collateral damage caused by the employment of airpower weapons. All of these challenges suggest an even greater need for the air commander to study and reflect in preparation for command decision-making than that imposed on surface commanders.

The air commander must also have a keen and discriminating sense of judgment to sort through rapidly changing information. He is challenged by an increased amount of available information throughout the entire theater to include the order of battle of all air and surface forces as well as an electronic order of battle as a fourth dimension of space to consider. He must also worry about changing operations due to weather considerations for weapon deliveries. As technology improves the ability to gather and transfer information to the commander this challenge will only become greater.

Another position to consider is that the US will probably fight future conflicts with Unified Commands combined into joint task forces. If this is the case, it is imperative for the operational air commander to understand the appropriate role for airpower in a given situation. This concept is analogous to the concept introduced by Corbett, whereby

The paramount concern, then, of maritime strategy is to determine the mutual relations of your army and navy in a plan of war. When this is done, and not until then, naval strategy can begin to work out the manner in which the fleet can best discharge the function assigned to it.⁸⁸

However, in the case of airpower operations, the primary concern is to determine the mutual relations of air and surface forces in a plan to achieve operational objectives. Clearly, the air commander must consider the independent as well as the supporting role of airpower. This

suggests that there will probably be times when land or sea power must support the air commander at the operational level and a good working relationship will be most helpful. Hence, one of the characteristics required for air command at the operational level is the ability to work in concert with other service commanders.

One final trait could be listed as a characteristic of genius for air command at the operational level of war: the capability to operate outside rules or doctrine. Although Clausewitz did not explicitly address this trait as an element of genius, he did recognize it in his treatment of theory when he said “that talent and genius operate outside the rules...”⁸⁹ General Cushman alluded to this trait when he said, “...you will encounter situations for which there is no 'doctrine' or in which doctrine gives you a range of choices, or where you conclude that established doctrine does not apply. You will be judged by how you succeed in your mission, not by how you follow doctrine.”⁹⁰ This trait begins to get at the notion that there are no common elements of genius, but each genius is, by definition, unique. While this study is based upon the presumption that some elements of genius are identifiable, one of them clearly may be the ability to disregard conventions in war that either are no longer relevant or that are at least no relevant for the task at hand.

Summary of Theory Regarding Military Genius

After reviewing the available literature on general and military genius, there appear to be several valid observations. First, elements of genius for land, sea, and air command have a large degree of commonality. These areas of overlap include judgment, *coup d'oeil*, presence of mind, superior intelligence, objectivity, an ability to operate outside rules, knowledge of the capabilities of one's people, an ability to know the physical limits of your resources, an ability to work in concert with other service commanders, moral and personal courage, determination, strength of will, and an ability to withstand the physical rigors of war. Second, almost all differences in degree of a given trait occur within the cognitive sphere. In other words, there appear to be only minor differences between the elements of genius among all mediums in both the moral and physical spheres. Lastly, the greatest differences between air and land genius appear to be within

the characteristics of *coup d'oeil* and presence of mind. The primary reasons for these differences include the ability to make decisions more rapidly in a larger spatial arena and the need for an appreciation of the sensitivity of tactical and operational results to technological change.

Based upon this review of theory, the potential elements of genius for air command include the following:

1. Cognitive Elements: a sensitive and discriminating judgment, *coup d'oeil*, presence of mind, an ability to operate outside the rules at the appropriate times, objectivity, an ability to work in concert with other service commanders, knowledge of the capabilities of one's people, knowledge of the capabilities of one's material resources, and a superior intelligence.
2. Moral Elements: moral courage; personal courage; determination or resolution; and a strong will which is measured by strength of character, firmness, staunchness, and energy.
3. Physical Element: a personal ability to withstand the physical rigors of war.

Paths to Genius

According to Roger Nye, author of The Challenge of Command, officers are simultaneously learning specialization, professionalization, and human growth throughout their entire careers. Specialized training starts with an assigned branch or system identifier, such as Undergraduate Pilot Training and continues with upgrade training of all types such as weapon system initial qualification, mission readiness checkout, flight lead, instructor pilot, and flight examiner. Learning about one's profession starts in basic training and continues through Squadron Officer School, Air Command and Staff College, Air War College, and beyond. The final aspect of learning applicable to training officers is development of human growth. This is the education necessary for all responsible human beings that transcends purely military affairs. It allows the commander to view his troops as human beings and his work as an expression of humanism. Much of this education is gleaned through personal reading, study and reflection.⁹¹

In sum, today's operational level air commanders will have three methods of achieving genius at the operational level of war: experience from previous assignments, preparation through study and reflection, or having luck. An officer cannot influence the amount of luck he

will have, so he must rely upon individual preparation and experience. In the words of Clausewitz

The knowledge needed by a senior commander is distinguished by the fact that it can be attained by a special talent, through the medium of reflection, study and thought: an intellectual instinct which extracts the essence from the phenomena of life, as a bee sucks honey from a flower. In addition to study and reflection, life itself serves as a source. Experience, with its wealth of lessons...may well bring forth the higher calculations of a Condé or a Frederick.⁹²

²³ Interview with Dr Harold R. Winton, School of Advanced Airpower Studies, Maxwell AFB, Ala., 10 March, 1994.

²⁴ David R. Jones, "Imperial Russia's Forces at War," in Military Effectiveness Volume I: The First World War, ed. Allan R. Miolett and Williamson Murray, (Boston, Mass.: Allen & Unwin Inc., 1988), 296-7.

²⁵ Lt Col Daniel W. Jordan III, The Use of Battlespace and Time in the Operational Art, Air War College Paper, Maxwell AFB, Ala., April, 1993, 7.

²⁶ Col Thomas A. Cardwell III, "Theater Air C³ Analyses--Future Needs," Phalanx, December, 1993, 1.

²⁷ Jordan, 27.

²⁸ Carl von Clausewitz, On War, ed. and trans. by Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 87.

²⁹ Ibid., 92.

³⁰ Ibid., 579.

³¹ AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, vol. 2, March, 1992, 44.

³² Ibid., 67.

³³ Ibid., 80-2.

³⁴ Capt W.J. Kotsch, US Navy, "The Six-Day War of 1967," US Naval Institute Proceedings 94, No. 6 (June 1968): 74.

³⁵ Group Captain Andrew G.B. Vallance, "The Conceptual Structure of Air Power," in Air Power Doctrine: Collected Essays on Doctrine, compiled by Andrew Vallance (London: Crown Copyright, 1990), 4.

³⁶ David A. Fulghum, "Talon Lance Gives Aircrews Timely Intelligence From Space," Aviation Week & Space Technology 139, no. 8 (23 August, 1993): 70-1.

³⁷ I.B. Holley Jr., "General Carl Spaatz and the Art of Command," in Air Leadership: Proceedings of a Conference at Bolling AFB, April 13-14, 1984 (Washington D. C.: US Government Printing Office, 1986), 17.

³⁸ Radoslav A. Tsanoff, The Ways of Genius (New York: Harper & Brothers Publishers, 1949), 202.

³⁹ J. M. Montmasson, Invention and the Unconscious, trans. H. S. Hatfield, (1932), 139, quoted in Tsanoff, 192-3.

⁴⁰ Charles Edward White, The Enlightened Soldier: Scharnhorst and the Militarische Gesellschaft in Berlin, 1801-1805 (New York: Praeger Publishers, 1989), 5-6.

⁴¹ Matthew Josephson, Edison: A Biography (Norwalk, Conn.: Easton Press with permission from McGraw-Hill, 1986), 158.

⁴² Roger H. Nye, The Patton Mind (Garden City Park, N.Y.: Avery Publishing Group Inc., 1993), 14.

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- ⁴³ John Briggs, Fire in the Crucible: The Alchemy of Creative Genius (New York: St. Martin's Press, 1988), 278.
- ⁴⁴ G.P. Lathrop, "Talks with Edison," Harper's Magazine (February, 1890), cited in Matthew Josephson, Edison: A Biography (Norwalk, Conn.: Easton Press with permission from McGraw-Hill, 1986), 427.
- ⁴⁵ Maj Gen Aubrey S. Newman, What Are Generals Made Of? (Novato, Calif.: Presidio Press, 1987), 228.
- ⁴⁶ Briggs, 278-9.
- ⁴⁷ *Ibid.*, 110.
- ⁴⁸ Tsanoff, 192.
- ⁴⁹ Briggs, 333.
- ⁵⁰ Holley, 17.
- ⁵¹ *Ibid.*, 18.
- ⁵² Briggs, 119.
- ⁵³ Clausewitz, 100.
- ⁵⁴ *Ibid.*, 101.
- ⁵⁵ *Ibid.*, 101.
- ⁵⁶ Morris Janowitz, The Professional Soldier (Toronto, Ontario: The Free Press, 1971), 150-165.
- ⁵⁷ Clausewitz, 102.
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- ⁵⁹ *Ibid.*, 103.
- ⁶⁰ Clausewitz, 101.
- ⁶¹ Richard E. Simpkin, Race to the Swift (New York: Brassey's Defence Publishers, 1985), 217.
- ⁶² Clausewitz, 101.
- ⁶³ *Ibid.*, 102-3.
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- ⁶⁵ Clausewitz, 104-5.
- ⁶⁶ *Ibid.*, 105-7.
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- ⁶⁹ *Ibid.*, 105.
- ⁷⁰ *Ibid.*, 105.
- ⁷¹ Julian Corbett, Some Principles of Maritime Strategy (Annapolis, Md.: United States Naval Institute, 1988), 307.
- ⁷² *Ibid.*, 155.
- ⁷³ *Ibid.*, 155-6.
- ⁷⁴ *Ibid.*, 342-3.
- ⁷⁵ *Ibid.*, 343.
- ⁷⁶ *Ibid.*, 325.
- ⁷⁷ *Ibid.*, 342.
- ⁷⁸ *Ibid.*, 156.
- ⁷⁹ *Ibid.*, 336.
- ⁸⁰ Carl H. Builder, The Masks of War: American Military Styles in Strategy and Analysis (Baltimore, Md.: The John Hopkins University Press, 1989), 31.
- ⁸¹ *Ibid.*, 16.
- ⁸² *Ibid.*, 16.
- ⁸³ AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, vol. 2, March, 1992, 79-83.
- ⁸⁴ Vallance, 2.

⁸⁵ Ibid., 3.

⁸⁶ Ibid., 4.

⁸⁷ Lt Gen John H. Cushman, Thoughts for Joint Commanders, (Annapolis, Md.: Whitmore Printing, 1993), 21-22.

⁸⁸ Corbett, 16.

⁸⁹ Clausewitz, 140.

⁹⁰ Cushman, 1.

⁹¹ Nye, 30.

⁹² Clausewitz, 146.

Chapter 3 Dowding: Command Performance for Defense

This chapter analyzes Air Chief Marshal Sir Hugh C. T. Dowding during the Battle of Britain. Dowding achieved significant results with limited resources. As he faced the seemingly indomitable *Luftwaffe* and Britain braced for a possible land invasion, he helped create and orchestrate the defensive system that stopped Nazi Germany's expansion for the first time during World War II. Whether or not Dowding demonstrated elements of genius for air command at the operational level requires further analysis. At this point, however, it is possible to conclude that the results were not the product of superior resources.

Operational Summary of the Battle of Britain

Most of the campaign took place over southeast England and the English Channel during 10 July-31 October 1940.⁹³ The operation was a pure air campaign between the Royal Air Force (RAF) and the *Luftwaffe*. Churchill eloquently summed up the significance of the battle, "Never in the field of human conflict was so much owed by so many to so few."⁹⁴ The leader of the few, Air Chief Marshal Dowding, commander of the RAF Fighter Command, won one of the most significant campaigns of World War II.

Campaign Situation

During the last days of June 1940, the Nazis contemplated their next move. The British Expeditionary Force had just been forced to evacuate from Dunkirk. The Germans had entered Paris on 14 June and signed an armistice with France on 22 June. Great Britain was therefore Germany's sole belligerent.⁹⁵ Hitler's next step was to expand either in the east against Russia or against England in the west. According to F.W. Winterbotham, the British Air Staff Intelligence representative with the Secret Service⁹⁶, "...ever since I had met Hitler for the first time in 1934 I had felt that his desperate desire for peace with Britain was no bluff. I knew above all he genuinely feared the British as an enemy...he obviously wanted peace in the West before he set out on the great mission that possessed his soul--if he had one--the destruction of Communist Russia."⁹⁷ Field Marshal Albert Kesselring agreed with

this assessment of Hitler when he said, “In my view he seriously cherished the belief that England would grasp his hand with its offer of peace.”⁹⁸ Reich Marshal Herman Goering, Commander-in-Chief of the *Luftwaffe*, believed England would sue for peace or be forced to surrender by air attack alone.⁹⁹ He did not put much faith in the memorandum presented to Hitler in late June by Maj Gen Alfred Jodl, Chief of the Operations Staff on the German Supreme Command (OKW), which suggested that Germany should intensify air attacks and if necessary a landing should be planned for Great Britain during August or September. Nonetheless on 2 July, Hitler ordered his armed forces to make provisional plans for an invasion of England.¹⁰⁰ Without air superiority over the channel and southeast England, however, no invasion could take place. The first skirmish between the *Luftwaffe* and Fighter Command occurred on 10 July 1940 when 32 British fighters from Group Number 11 engaged 20 German aircraft that were attacking a coastal convoy in the Straits of Dover.¹⁰¹ The Battle of Britain had begun.

The Campaign Plan

German planning for the Battle of Britain was ill-conceived. Following an ad hoc build up of airfields in France, Belgium, and Holland, Goering devised an initial concept. It included testing British defenses by using fighters to escort small bomber formations; attacking seaports and harbors; and then executing a maximum effort to destroy the RAF by attacking its ground facilities, and its aircraft factories.¹⁰² The apparent purpose of these attacks, in Goering's mind, was to force Britain to surrender without an invasion either through the direct effects of strategic bombing or from the indirect effects of an air blockade.

Meanwhile, Major General Jodl, chief of the operations staff at *Oberkommando der Wehrmacht* (OKW), the German Supreme Command, convinced Hitler to adopt a formal plan that included a possible invasion of England.¹⁰³ Hence, OKW ordered the armed forces to make provisional plans, “...on the basis that the invasion is still only a plan, and has not yet been decided upon.”¹⁰⁴ The 2 July directive did not significantly change Goering's

operational plans, as it only added occasional terror bombings.¹⁰⁵ However, both the army and navy devised their own invasion plans without coordinating among the other services.¹⁰⁶

Then on 16 July, after the German navy and army submitted these, Hitler formally instructed his armed forces to prepare to invade England in accordance with the plan for an operation code-named Sea Lion. Hitler's reasons for the invasion were set out in his Directive Number 16, "This operation is dictated by the necessity of eliminating Great Britain as a base from which the war against Germany can be fought; if necessary the island will be occupied."¹⁰⁷ The tentative date set for the invasion was 15 September. According to the plan, achievement of air superiority was considered essential. The *Luftwaffe* was specifically assigned two major tasks: eliminate the RAF as a fighting force, including its ground organization; and strangle the supply of Great Britain by attacking its ports and shipping.¹⁰⁸ According to Walter Warlimont, deputy chief of the OKW operations staff under Jodl, neither Hitler nor the chief planners planned the operation in detail as they had in the war's previous campaigns, "Never before or since had there been such an opportunity for them [OKW staff] to use their own initiative in the preparation of an operation."¹⁰⁹ According to Kesselring, the commander of *Luftflotte* Two during the battle

The preliminaries to Operation Sea-lion, which was to have had as its objective the invasion of England, reveal the planlessness of our conduct of the war....In contrast to our preparations for previous campaigns, there was not one conference within the *Luftwaffe* at which details were discussed with group commanders and other services, let alone with the High Command or Hitler himself. The conversations I had at my battle headquarters...with Goering and the military and naval commanders appointed for Sea-lion were also informal talks rather than binding discussions....no orders were issued to the Chiefs of Air Commands...I am forced to agree with...Fuller when he writes that Sea-lion was often contemplated, but never planned.¹¹⁰

In short, Hitler hoped to achieve peace with England either through the effects of strategic interdiction of British supplies and destruction of the RAF; or if necessary with an invasion after the *Luftwaffe* had achieved air superiority. Goering's operational planning was biased by his overconfidence and his mis-appreciation of the available resources of the RAF

and the *Luftwaffe*. When comparing the resources of the RAF and the *Luftwaffe*, one must consider the number of aircraft available, operational characteristics of the aircraft, numbers of pilots, level and type of training, and loiter time in the objective area.

Goering's resources included three *Luftflotte*: *Luftflotte* 2, commanded by Kesselring in Brussels; *Luftflotte* 3, commanded by Field Marshal Hugo Sperrle in Paris; and *Luftflotte* 5, commanded by *Generaloberst* Hans-Jurgen Stumpff in Stavanger, Norway.¹¹¹ See table 1 for a brief summary of aircraft in the theater on 20 July 1940. Since single engine fighters would determine which side achieved air superiority, the critical statistics to

Table 1 Aircraft Strength in British Theater on 20 July 1940

British Fighters in England	609 (531) Single Engine Fighters
German Aircraft in France, Belgium, and the Netherlands (<i>Luftflotte</i> 2 and 3)	809 (656) Bf 109 Fighters 246 (168) Bf 110 Fighter-Bombers 316 (248) Ju 87 Dive Bombers 1131 (769) Twin Engine Bombers 67 (48) Long-Range Reconnaissance 82 (46) Coastal Reconnaissance
German Aircraft in Norway and Denmark (<i>Luftflotte</i> 5)	84 (69) Bf 109 Fighters 34(32) Bf 110 Fighter-Bombers 129 (95) Bombers 67 (48) Long-Range Reconnaissance 28(15) Coastal Reconnaissance

Note: The first number listed is the number of aircraft on hand; the number in parentheses is the number of serviceable aircraft.

Source: Len Deighton, *Fighter: The True Story of the Battle of Britain*, 119.

glean from this table are the 725 serviceable single engine Bf 109s available to the *Luftwaffe* versus the 531 serviceable RAF single engine fighters. Not only did the Germans have an advantage in numbers, but in general, their Messerschmitts had equivalent or better performance capabilities.

According to Dr David Mets, the Bf 109E had a definite qualitative advantage over the Hurricane and it was the rough equivalent of the Spitfire. The Bf 109E had a superior climb rate, diving performance, and high altitude performance.¹¹² Lt Gen Adolf Galland, Commander of the *Luftwaffe* Fighter Command, regarded the Spitfire as being more maneuverable than the Bf 109E at all speeds, but he believed that the Hurricane was inferior to the Bf 109E.¹¹³ The Bf 109E also had a cannon with superior weight in individual rounds. Both of the British fighters, however, had the edge in volume of fire.¹¹⁴ The final advantage of the Bf 109E was that its engines used injection pumps rather than carburetors, as did the RAF fighters. This technical edge was significant as the German engines would be less likely to stall out during critical periods of aerial combat.¹¹⁵ The major limitation of the Bf 109E was its maximum range of 412 miles.¹¹⁶ Galland put this range limitation in perspective when he said that the Bf 109s flew without drop tanks and had a total flying time of about 1.5 hours.¹¹⁷ However, when flying at tactical speeds, the actual time over the objective area was limited to no more than 20 minutes since it took about 30 minutes from takeoff to reach the English coast after crossing the narrowest point of the English Channel. Essentially, the effective combat radius of the Bf 109E was 125 miles.¹¹⁸ He later concluded that this limitation was a decisive factor in forcing the *Luftwaffe* to break off daylight bomber operations at the end of September.¹¹⁹

According to Derek Wood and Derek Dempster, coauthors of the Narrow Margin, “Transcending all material problems, however, was the shortage of fighter pilots. This, and not aircraft, could have lost the R.A.F. the Battle of Britain.”¹²⁰ Although the RAF had pilots from Poland, Czechoslovakia, France, Belgium, Canada, other British dominions, and the US, their numbers were limited to 574 from these countries throughout the entire battle.¹²¹ As of 6 July, Fighter Command had a total of 1,259 fighter pilots in the 52 authorized operational squadrons. This number was 197 pilots below the authorized strength of 28 pilots per squadron. As the number of RAF fighters available grew during the

Table 2 Number of Fighter Pilots in Fighter Command June-November 1940

Date	# of Pilots Authorized	Actual # of Pilots	Deficiency Surplus	or
15 June	1,456	1,094	-362	
30 June	1,482	1,200	-282	
6 July	1,456	1,259	-197	
13 July	1,456	1,341	-115	
20 July	1,456	1,365	-91	
27 July	1,456	1,377	-79	
3 August	1,588	1,434	-154	
10 August	1,588	1,396	-192	
17 August	1,588	1,379	-209	
24 August	1,588	1,377	-211	
31 August	1,588	1,422	-166	
7 September	1,588	1,381	-207	
14 September	1,662	1,492	-170	
21 September	1,662	1,509	-153	
28 September	1,662	1,581	-81	
5 October	1,714	1,703	-11	
12 October	1,714	1,752	+38	
19 October	1,700	1,737	+37	
26 October	1,727	1,735	+8	
2 November	1,727	1,796	+69	

Source: Derek Wood with Derek Dempster, The Narrow Margin (Washington D.C.: The Smithsonian Press, 1990), 348.

conflict, the number of pilots available remained approximately 100-200 pilots below the authorized strength until 28 September 1940. (See table 2.)¹²²

The *Luftwaffe* had similar constraints on the number of its fighter pilots at the start of the Battle of Britain. According to Horst Boog, the *Luftwaffe* planned to be 17 percent undermanned in fighter pilots during September 1939.¹²³ Additionally, statistics from Williamson Murray, in his book Strategy for Defeat: The *Luftwaffe* 1933-1945, indicate that the Bf 109s and Bf 110s were both manned at 82 percent on 20 July 1940.¹²⁴ Based on the available 893 Bf 109s and 280 Bf 110s, listed in table 1, and assuming a ratio of two pilots available per assigned aircraft, the total *Luftwaffe* fighter pilot strength on the Western Front was 1,924 on 20 July. It would have been possible to supplement these forces with pilots from the single fighter training school. Overall, the percentage of fighter pilots available for Germany decreased throughout the summer of 1940.¹²⁵ This shortage existed because of losses during the battle and because the *Luftwaffe* had no fighter pilot reserves since they only had one fighter training school.

The German fighter pilots had a similar level of training when compared to their RAF counterparts. Although it is true that the Germans were not allowed to maintain an air force under the constraints of the Versailles Treaty,¹²⁶ her pilots did train in flying clubs and fighter pilots trained covertly at Lipesk, Russia from 1926-1933.¹²⁷ According to the US Strategic Bombing Survey, over the period January 1939 to September 1942, all *Luftwaffe* pilots averaged about 220 training hours compared to the 180 hour average for all RAF pilots.¹²⁸ Furthermore, during the same period, this training included an average of 80 hours of flying in operational aircraft for German pilots and 50 hours for the British pilots.¹²⁹ However, the German fighter pilots had the lowest average among the *Luftwaffe*. Wing Commander Asher Lee, RAF, outlined the German fighter pilot training as follows: “A” Course flying 30 hours in light aircraft, “B” Course flying 60-70 hours in slightly faster training aircraft, Fighter Specialist School flying 50 hours in fighter type aircraft, and 20 hours of flying the latest fighters within a fighter operational training pool. Only within the final 20 hours of training

would the fighter pilots learn formation flying, aerobatics, interception, and mock dog-fights. Pilots assigned to a twin-engine fighter would complete instrument flying over a six to 18 month period.¹³⁰

Although combat experience is not a formal part of training, the experiences of the *Luftwaffe* fighter pilots prior to the Battle of Britain, gave them a slight edge in their operational readiness. First, they gained combat experience flying Heinkel 51s and Messerschmitt 109s against Soviet built I-15 biplanes during the Spanish Civil War.¹³¹ These missions were flown under the command of the German Condor Legion within Spain in support of the Nationalists throughout the Spanish Civil War.¹³² The *Luftwaffe* fighter pilots also gained some experience during their attacks on Poland in the fall of 1939, Norway in the spring of 1940, and France and the low countries in May-June 1940. In short, most of the senior pilots had victorious battle experience and exhibited a feeling of confidence prior to the Battle of Britain.¹³³ On the other hand, the RAF fighter force had limited combat experience, with devastating losses in its fight to save France and the low countries, and some success as the Allies retreated from Dunkirk. It is important to note that the *Luftwaffe's* BF 109E was superior to the Hurricanes, that were the most advanced RAF fighter on the continent during the German offensive.¹³⁴ The *Luftwaffe* first encountered the Spitfires during engagements that supported the Dunkirk evacuation, and for the first time, the *Luftwaffe* failed to achieve its objective.¹³⁵ These encounters provided some indication of the level of training of the RAF fighter pilots.

The training level of RAF fighter pilots was similar to that of the German fighter pilots. The RAF had a well-established flying training command, and by 1939, 5,000 volunteers were serving as part-time air crews or in training.¹³⁶ The RAF was unwilling to accelerate the training of its pilots because the minimum time required to train a fighter pilot was nine months and the RAF estimated that pilots with less training time risked killing themselves before they entered combat.¹³⁷ Hence, the critical time for determining requirements for the Battle of Britain was September 1939. Dowding only had 34 squadrons at that time and he

was trying to convince the Air Ministry that the planned expansion to 52 should be used exclusively for home defense.¹³⁸ He knew that if the British Expeditionary Force (BEF) was deployed, they would need fighters and he was trying to establish their requirements.¹³⁹ Neither the Air Ministry nor the BEF established firm requirements for additional fighters and hence, fighter pilot training was not expanded during the fall of 1939. When the crisis came after the fall of France, Churchill ordered the naval and air staffs to transfer any qualified fighter pilots to Fighter Command. By the end of June 1940, 58 naval pilots reported to the RAF for conversion training. Some Coastal Command and Bomber Command pilots were transferred to fighters immediately. Lastly, a few pilots from Army co-operation squadrons were brought into Fighter Command during August.¹⁴⁰ Overall, the best measurement of training and experience is reflected in the combat performance of pilots.

An observation of Galland supports the assertion that pilot experience and proficiency were about equal between the RAF and the *Luftwaffe*, "They [RAF pilots] always fought very spiritedly, very hard, and very fairly."¹⁴¹ In his opinion their training, discipline, and courage were equal to anything he had ever seen.¹⁴² David Mets also argues that the experience level of the pilots was not an advantage to either side, "If the British air service had enjoyed a more continuous development, the Germans had more recent combat experience."¹⁴³

In terms of unit training, as opposed to individual training however the Germans had a clear advantage. The formations flown by the *Luftwaffe* were superior to the RAF during the opening skirmishes of the Battle of Britain. During the Spanish Civil War, Captain Werner Molders had developed the German tactical formations known as the *rotte* and the *schwarm*, respectively two aircraft and four aircraft formations. The *rotte* was a spread formation having 600 feet of distance between aircraft, and the *schwarm* consisted of two *rotte* flying in a finger four formation.¹⁴⁴ These tactical formations are variations of the formations flown by USAF fighters today. On the other hand, the RAF was still flying rigid line abreast formations during the opening stages of the Battle of Britain; and its losses were horrendous.

Consequently, the RAF modified their formations after their initial engagements with the Germans.¹⁴⁵

To counter the *Luftwaffe*, Dowding had 52 fighter squadrons (See appendix A for a precise description.) within Fighter Command¹⁴⁶ and operational control of the 1,204 heavy and 581 light guns of the Anti-Aircraft Command.¹⁴⁷ Fighter Command consisted of four major groups: Number 10 Group, commanded by Air Vice-Marshal Sir Christopher J.Q. Brand; Number 11 Group, commanded by Air Vice-Marshal Keith R. Park; Number 12 Group, commanded by Air Vice-Marshal Trafford Leigh-Mallory; and Number 13 Group, commanded by Air Vice-Marshal Richard E. Saul.¹⁴⁸

Although the resources within Fighter and Anti-Aircraft Commands were important, the linchpin that effectively tied these commands together was the centralized command and control system that included high and low altitude radar chains. Dowding had played a major role in the design, organization, and construction of the command and control system that he would master during the Battle of Britain. By July 1940, the British had completed their Chain Home radar system consisting of 20 long range radar sites. Since these installations did not have a low-altitude capability, 30 supplemental sites were erected to close the gap in low-altitude coverage. At the start of the conflict each aircraft was equipped with a Very High Frequency (VHF) transceiver and later Identification--Friend or Foe (IFF) equipment was installed for control purposes. The combination of these technological advancements led to the development of the Ground Controlled Intercept (GCI) which is how Fighter Command directed fighters to intercept German aircraft formations. The key point of the command and control system was that it denied the *Luftwaffe* the capability to achieve tactical surprise.¹⁴⁹

Although the Germans had more available fighter aircraft than the British, Fighter Command had several additional advantages of its own. First, most engagements took place over England. This allowed the RAF to launch more sorties per aircraft than the Germans, which tended to mitigate the adverse force ratio. It also allowed the RAF to recover aircraft and, more significantly, pilots at a much higher rate than the Germans. Second, "Dowding

was linked with ULTRA from the outset,”¹⁵⁰ from which he received information that aided his decision-making. Finally, RAF fighter pilots were fighting for their home which provided a very high incentive to prevail at all costs.¹⁵¹ Even as late as 15 September, after suffering numerous losses, Park would never “...forget the courage of his outnumbered pilots. Their moral was so high, he thought, because they had done well at Dunkirk. They believed that persistent opposition would eventually discourage the *Luftwaffe* and they knew that, in any case they had no choice.”¹⁵² Despite all of the advantages which tended to offset German numerical superiority, the *Luftwaffe* stressed Fighter Command nearly to its limit.

Campaign Execution

The campaign was initially driven by the actions of the *Luftwaffe*, for its leaders had the initiative. They could choose where and when they would attack within the limits of their aircraft ranges.¹⁵³ Therefore, looking at significant changes in German tactics and targeting, the campaign consisted of four phases of execution. Briefly, these phases were Phase One, 10 July-12 August, the 'Channel War'; Phase Two, 13 August-15 September, the primary attack on Fighter Command; Phase Three, 7 September-6 October, the switch to attacks on London; and Phase Four, 7-31 October, the German withdrawal.¹⁵⁴ One should recognize however that, “these phases indicated only general tendencies; they overlapped and were not mutually exclusive.”¹⁵⁵

The first phase included German attacks against British convoys and coastal objectives such as, ports, coastal airfields, and radio location stations.¹⁵⁶ Although this phase appears in retrospect to have been a warm-up period, it was designed by the Nazis to draw the British fighters out over the channel and engage them under the most favorable conditions to the Germans and the least favorable to the British.¹⁵⁷ The larger objective was to weaken Fighter Command strength for follow-on attacks. Dowding refused to play into Goering's hand. Instead, he husbanded his forces for later German attacks and adopted a policy that British fighters engage enemy formations only if they included bombers.

Hitler refined the campaign focus on 1 August when he directed that the RAF should be destroyed as soon as possible by all available forces.¹⁵⁸ This initiated the second phase, starting on 13 August when the *Luftwaffe* focus shifted solely to the destruction of Fighter Command and its inland airfields. The RAF believes this was the critical period. On 14 August, Dowding was using his radar system and ULTRA intercepts effectively. The Germans planned to keep their attacks timed to stretch Fighter Command's defenses. However, Dowding capitalized on his ULTRA information when he alerted Leigh-Mallory and Saul in time to intercept *Luftflotte 5* at sea and attacked two waves sent from Norway. The loss of 23 bombers against no RAF losses, convinced *Luftflotte 5* not to try again.¹⁵⁹ By early September "The Germans....had knocked out 3 of the long-range radar sites and had almost destroyed the effectiveness of No. 11 Group by their airfield attacks....At this crucial moment, the War Cabinet was informed that the Fighter Command would not be able to continue effective operations for more than 48 hours."¹⁶⁰ According to a report from Number 11 Group to Fighter Command, dated 12 September, Park said, "...the enemy's bombing attacks by day had done extensive damage to five forward aerodromes and also to six out of seven sector stations....had the enemy continued his heavy attacks to the adjacent sectors, knocked out their operations rooms or telephone communications, the fighter defences of London would have been in a powerless state during the last critical phase..."¹⁶¹ Nonetheless, during this phase the *Luftwaffe* did not achieve air superiority; and the German leadership remained confused concerning the true strength of Fighter Command.

Phase three began on 7 September after several RAF bombing raids on Berlin during the nights of 25 August to 4 September. "For Hitler it was too much. He abandoned all restraint. With angry disillusionment he proclaimed: 'Since they attack our cities we shall wipe out theirs.'"¹⁶² Goering took personal command of the *Luftwaffe* and shifted targeting to London. His initial attack force included 625 bombers with an escort of 648 fighters.¹⁶³ The *Luftwaffe* delivered their maximum effort on 15 September and continued heavy pressure through 27 September.¹⁶⁴ Although the *Luftwaffe* would continue to attack London, phase three ended

for the Nazis without achieving success. Hitler postponed Operation Sea Lion on 17 September.¹⁶⁵ Churchill learned of this decision based on an ULTRA intercept from the German General Staff relating Hitler's authorization to dismantle paratroop air-loading equipment at Dutch airfields on 17 September.¹⁶⁶ This knowledge, shared with Dowding

The final phase starting on 7 October can be described as a German withdrawal.¹⁶⁷ Despite the fact that Sea Lion had been canceled, Goering had issued a new directive for this time frame that outlined an ambitious plan of attack. He demanded: absolute control of the English Channel and English coastal areas; annihilation of London; paralysis of Britain's technical, commercial, industrial, and civil life; demoralization of the civil population; and progressive weakening of Britain's forces.¹⁶⁸ This phase was characterized by the new *Luftwaffe* tactic of using fighters as bombers. Fighter Command had to determine which aircraft had bombs and which did not. Park devised a successful plan to use pairs of Spitfires to act as reconnaissance aircraft, determine which formations were bombers, and report this information back to group headquarters. Also, during this period Dowding and Fighter Command had to adjust tactics to counter increased *Luftwaffe* night attacks. By 31 October the Germans abandoned their attempts to wear down Fighter Command, and the campaign ended.¹⁶⁹

Campaign Results

The most significant result of the Battle of Britain occurred when Hitler indefinitely postponed the invasion of Britain on 17 September 1940.¹⁷⁰ Dowding's Fighter Command successfully defended Britain and did not allow the *Luftwaffe* to achieve air superiority. Hence, England and the US had the time to construct a bomber force to carry the air war to the German homeland.¹⁷¹ According to Ronald Lewin, author of Ultra Goes to War

Many well-recognized factors contributed to the ultimate success--the pilots' devotion, the quality of British radar, Goering's errors. But it was in the mind of...Dowding--that those delicate, difficult, day-to-day judgments were made which, in the end, drew the fine decisive line between victory and defeat. Often they were judgments as urgent and as taxing as any commander has had to make.¹⁷²

The final results of both British and German aircraft losses are displayed in appendix B.

Trait Observations of Air Chief Marshal Dowding During the Campaign

In the words of Sir Winston Churchill before the House of Commons, 20 August 1940

The foresight of Air Marshal Dowding in his direction of Fighter Command deserves high praise, but even more remarkable had been the restraint and exact measurement of formidable stresses which had reserved a fighter force in the North through all these long weeks of mutual conflict in the South. We must regard this generalship here shown as an example of genius in the art of war.¹⁷³

Dowding's actions before the Battle of Britain had a tremendous effect on his decision-making during the conflict as well as on the outcome itself. From his assignment as the Chief of Fighter Command on 12 July 1936, until the battle began, he was the mastermind who designed and built the command. He promoted the development of radar; installed both a high and low radar chain; refined a comprehensive command and control network that included the Observer Corps; and gained funding for and built all-weather runways at fighter aerodromes.¹⁷⁴ These actions formed a relevant and useful experience base for his decision-making during the conflict. Building on this vast experience base and methodical preparation for the conflict, Dowding faced and met challenges during the campaign in all three spheres of genius--cognitive, moral, and physical.

Trait Observations Within the Cognitive Sphere

Dowding seemed to have an innate ability to operate outside the rules at the appropriate times and within the appropriate situations. In his own words, "Since I was a child I have never accepted ideas purely because they were orthodox, and consequently I have frequently found myself in opposition to generally accepted views."¹⁷⁵ When Dowding attended staff college in 1913

...the cavalry was the vaunted force and any contrary views were suspect and one was labeled a 'bad boy' if you thought the cavalry would be replaced by machines. Dowding, fast becoming distrustful of accepted notions and seldom reluctant to incur the odium that visits the unorthodox, was not long in admission to that class.

Functions of reconnaissance and offense were functions of the cavalry and not aircraft or armored vehicles.¹⁷⁶

Another example of this behavior is described by Dr David Mets, “The nonconformist of the RAF was Hugh C.T. Dowding...Although Prime Minister Stanley Baldwin, along with most of the Air Staff, was still advocating that 'the bomber will always get through,' Dowding felt that the bombers might never have a chance to prove it unless the RAF saw to the security of the base.”¹⁷⁷

Dowding also demonstrated his ability to operate outside the rules during the campaign itself. Although it is a standard practice not to broadcast one's intentions to the enemy, the following excerpt of Dowding explains how he adopted innovative techniques to provide communications to his pilots

Orders were given to pilots in their aircraft by means of a very simple code which could be easily memorized. I realized that the enemy might pick up signals in some cases,...I therefore introduced several synonyms the significance of which was not obvious to the enemy. The code word for height was angels, which followed by the number of thousands of feet....when it appeared probable that the enemy were taking advantage of this information I introduced a false quantity into the code signal.¹⁷⁸

Interestingly enough, Dowding also developed an ability to work outside the rules with the Anti-Aircraft Artillery Commander, Lt Gen Sir Frederick A. Pile. “Happily, he and Dowding established a cordial relationship almost from the start. Both airman and soldier united by common interests, by a common readiness to accept unorthodox solutions to their problems if the logic of the situation counseled them.”¹⁷⁹ This logic was most often supported by gathering facts and being objective. An example of this spirit of cooperation was demonstrated when Dowding and Pile agreed to the procedure to keep the searchlights of large portions of England off during night bombing attacks. In the words of Pile

...one night, after a series of severe and consecutive raids, [on Birmingham and Coventry] we tried the experiment of forbidding the searchlights to expose. The result was extraordinarily effective. Both Birmingham and Coventry, their defenses inactive, enjoyed bomb-free nights. I was forced...to suggest to Dowding that during this phase of the battle, [late August] and until we had sufficient equipments for an

evenly spaced carpet of searchlights over the whole country, we should black out great areas at a time, varying these from night to night. The Air Ministry agreed, and the thing was done.¹⁸⁰

Dowding had a reputation for experimenting and gathering additional facts, or being objective, before making decisions when he was the Air Member for Research and Development for the Air Council. "The new arrangement suited his talents well. It...left him free to exploit, to the nation's profit, a gift for assessing future needs and sizing up the strength and weakness of an innovation."¹⁸¹ One example that demonstrates his objectivity occurred when he decided to choose the monoplane fighter rather than the biplane fighter. Essentially, his engineers suggested that the RAF continue building biplanes. Their primary argument was that for any given weight a biplane gave more lift, hence the biplane construction was superior to the monoplane. If this assertion was true, Dowding wanted to know why the biplanes were not entered in the Schneider Trophy contest. This objective question revealed to the advisors that their assumptions were valid only with moderate performance aircraft. If high speed flight were considered, the monoplane had a distinct advantage.¹⁸²

He maintained this objectivity when he became the Chief of Fighter Command. An example that demonstrated this characteristic occurred during the summer of 1938.

Some experiments...had shown that dispersal alone, without any form of splinter-proof protection, afforded a reasonable safeguard against the forms of attack practiced by our Bomber Command at the time. Thirty unserviceable fighters were disposed in a rough ring of about 1,000 yards diameter, and the Bomber Command attacked them for the inside of a week with every missile between a 500-pound bomb and an incendiary bullet, without any kind of opposition. The result was substantially: 3 destroyed, 1 damaged beyond repair, 2 seriously damaged but repairable, and the rest slightly damaged to untouched.¹⁸³

This experiment led to each fighter squadron having aircraft pens for protection instead of relying solely on dispersal. Based on the objective analysis initiated by Dowding, "Losses at dispersal points were not serious; the worst in my recollection was 5 aircraft destroyed or seriously damaged in one attack."¹⁸⁴ Although Dowding clearly demonstrated his

objectivity, he was faced with a situation just prior to the campaign that would require a different cognitive trait--*coup d'oeil*.

Dowding was under tremendous pressure during May 1940 to send as many fighters as possible to France to help stop the German onslaught which began on the night of 9 May. According to Churchill

During the 14th the bad news began to come in....At 7 P.M. I read to the cabinet a message received from M. Reynaud [French Premier] stating that the Germans had broken through at Sedan, that the French were unable to resist...and asking for ten more squadrons of fighters to re-establish the line.¹⁸⁵

Additional pressure mounted as the British found out that the RAF only had 206 serviceable aircraft out of 474 and Churchill received a phone call at 0730 on 15 May with the message that France was lost. Later in the day, Churchill flew to Paris and found out that the French did not have a strategic reserve to counter the German breakthrough at Sedan. General Maurice Gamelin, Chief of General Staff for National Defense for France, insisted "...on their inferiority in the air, and earnest entreaties for more squadrons of the Royal Air Force, bomber as well as fighter, but chiefly the latter.¹⁸⁶ Additionally, Field Marshal Viscount Gort, Commander of the British Expeditionary Force and Air Chief Marshal Sir A.S. Barrat, Commander of the RAF in France also demanded additional fighters be sent to France.¹⁸⁷ Despite these tremendous pressures, Dowding would fight to maintain his fighter strength.

Dowding demonstrated his *coup d'oeil* during one of the darkest hours for both France and England as the Germans were advancing rapidly through western Europe. As of 15 May 1940, Fighter Command had lost the equivalent of 18 squadrons. To make up for this deficiency, four additional Hurricane squadrons were sent to fight in France during the day and returned to British bases at night.¹⁸⁸ Dowding felt that sending additional fighters to France would put England at tremendous risk. He had adopted this position ever since the start of WWII. According to Dowding

I was responsible for the Air Defence of Great Britain, and I saw my resources slipping away like sand in an hour-glass. The pressure for more and more assistance to France was relentless and inexorable.¹⁸⁹

He asked the Air Ministry to arrange an audience with the Defense Cabinet so he could attempt to convince the leadership to stop the exodus of his fighters from England in support of France. "The fear that it might be the prelude to other blunders sharpened his determination to make his views quite clear to the Air Ministry."¹⁹⁰ He knew the inherent disadvantages of sending the aircraft to fight on the continent. The fighters would be flying without the support of the command and control system; and they would be flying over enemy territory and any minor malfunctions that led to subsequent landings would mean spending the duration of the war as a prisoner for the downed aircrews and the loss of the aircraft.¹⁹¹ The Air Ministry was not in full support of his position. Dowding said, "Look here, you can't do anything to help me. May I have a personal interview with the War Committee?"¹⁹² He fought, even to the point of personally taking a chart of fighter losses and placing it personally in front of Churchill.¹⁹³ According to some members present at the meeting, after he completed his argument, "...he threw down his pencil he was holding, as if to make it clear that, should the decision go against him, he meant to be asked to be relieved of his responsibilities."¹⁹⁴ The next day Dowding wrote a letter to the Air Ministry to ensure that no more squadrons would be sent to France.¹⁹⁵ "In light of this letter, and perhaps Dowding's graph, Mr. Churchill ruled on 19 May, in his capacity as Minister of Defence, that henceforth no more fighter squadrons should leave the country, irrespective of events in France."¹⁹⁶ As events would turn out, Dowding had identified and fought courageously for the correct action in a time of great crisis. In his own words, "this had been his own Battle of Britain."¹⁹⁷ These actions also demonstrated Dowding's determination and firmness. Lastly, this decision was an introduction to the good judgment that Dowding would display throughout most of the battle.

In most decisions during the campaign, Dowding demonstrated a sensitive and discriminating judgment. During the first phase of the campaign, he clearly revealed his

good judgment when he decided to send fighters sparingly over the English Channel. He knew, "The object being to draw the fighters out, and to engage them in the most favorable conditions to the Germans and the least favorable to us..."¹⁹⁸ "Dowding...was able to recognize Goering's strategy from his ULTRA signals, was not to be drawn and continued to use the minimum of fighters to disrupt and confuse the bomber squadrons so as to make accurate bombing more difficult."¹⁹⁹ He established a policy to conserve his fighters and it paid off on 15 August when he had barely enough assets to meet the *Luftwaffe* onslaught.²⁰⁰ By 31 August, "...Dowding...must have been sorely tempted to counter the German air superiority in the outer-London area by sending the idle squadrons of central and northern England to support the heavily engaged ones of 11 Group. But he did not do so. He believed that the time was still not ripe to commit his final reserves."²⁰¹ His judgment proved correct when the heaviest enemy attack finally did come on 15 September, "The unexpected strength of our fighters was too much for the *Luftwaffe*; they had been told we hadn't any left; they turned and fled."²⁰²

He also displayed good judgment by letting his subordinates operate autonomously. "I didn't attempt to centralize our tactical control at my own headquarters. I gave that absolutely to the groups and sectors....the actual fighting of the aircraft, tactical methods and so on, I left to the group commanders..."²⁰³ Additionally, "He delegated authority readily and seldom interfered with subordinates he trusted. This mode of operation is a form of air *Auftragstaktik*²⁰⁴, and this style of command complements the inherent flexibility of airpower.

On the other hand, Dowding demonstrated poor judgment when, "...almost every fine night during the Battle of Britain I was out in a barge down with these technical operations...where these experiments were going on..."²⁰⁵ There were two reasons this demonstrated poor judgment: first, Dowding would wear himself down physically over the course of the campaign; and second, he was preoccupied with technical details that could have been left to others. According to visitors who saw Dowding during September at

Bentley Priory, "If Dowding was jubilant he did not look it. His face--its natural pallor enhanced by the peaked cap he wore and by the deep shade of portico--seemed that of a man of poor health, though in fact he was suffering only from insufficient sleep and the strain of striving to meet a gathering night-offensive with resources designed for beating off attacks in daylight.²⁰⁶ Monitoring experiments at night and thereby being tired from lack of sleep degraded the effectiveness of his thinking in times of stress and appears to have been an unnecessary strain for an operational level air commander during combat operations.

A possible consequence of his neglect of personal rest and preoccupation with solving the night fighter tactics, was his lack of initiative in settling the operational disputes between Park and Leigh-Mallory. These two group commanders were arguing the utility of wing versus squadron forward attack, but the argument had operational consequences. As early as August, Leigh-Mallory's number 12 Group had twice failed to cover Number 11 Group's aerodromes when Park's fighters were engaging the enemy in forward areas. "Those aerodromes were bombed and consequently all requests for aid from Leigh-Mallory had since been submitted to command controller in the hope that squadrons would be sent to and remain in the areas required."²⁰⁷ Subsequently, Park sent a formal letter to Dowding on 29 September stating that arrangements with Leigh-Mallory were unsatisfactory.²⁰⁸ Although Dowding forwarded a copy of Park's letter to Leigh-Mallory on 8 October, he took no decisive action. The situation become so controversial that Air Chief Marshal Sir Cyril Newall, Chief of the Air Staff, called a conference at his headquarters on 17 October to discuss major tactics of fighter formations. At this meeting Park argued for forward squadron attacks, but Dowding did not back him up. Instead, Assistant Chief of the Air Staff, Air Vice-Marshal Sholto Douglas and Leigh-Mallory carried the day for forward wing attacks and all references that Park made concerning the failure of Number 12 Group to do as it was asked, were removed from the meeting minutes.²⁰⁹ By 26 October 1940, "nearly a month had now elapsed since Park and Leigh-Mallory had clashed over their respective tactics. But Dowding had been so preoccupied that he had been unable to do little about the

controversy.”²¹⁰ Although it is unclear whether a lack of rest, or a preoccupation with night fighting tactics caused Dowding to take appropriate action when two of his group commanders could not agree on operational matters, the incident does demonstrate poor judgment. Briefly, the operational air commander should focus on operations when he is running the campaign and he should refrain from outside distractions when possible. This is especially true when the outside interest is causing the commander to lose sleep, because as a minimum, he will be less sharp and this could degrade his presence of mind or focus.

Although Dowding chose to neglect his own physical needs, he was keenly aware of the physical limits of his own personnel in Fighter Command. When Dowding described his aircraft alert program he mentioned, “Then of course it is very necessary...to insist on his fellows getting a certain amount of exercise and relaxation. The tendency was to sit week after week all hunched up ready to take off at a moment's notice, and people got stale and nervy, and unhealthy all through that. One had to see that they got the proper rest and exercise or else they couldn't do their job.”²¹¹ As of 15 August, Dowding had implemented a policy to get some rest for his pilots. From Dowding's perspective

Many of the pilots were getting very tired. An order was in existence that all pilots should have 24 hours leave every week, during which they should be encouraged to leave their station and get some exercise and change of atmosphere: this was issued as an order so that the pilots should be compelled to avail themselves of the opportunity to get the necessary rest and relaxation....Other measures were also taken to provide rest and relaxation at Stations, and sometimes to find billets for pilots where they could sleep away from their Aerodromes.”²¹²

Dowding was also well aware of the physical limits of his machines and he implemented a rotation policy to prevent his aircraft from wearing down too far. In his words, “...when the intense fighting began, a new squadron would come into the line. It would have its full complement of machines...and they'd fight until they couldn't put more than about eight or nine machines into the air.”²¹³

Dowding was never forced to demonstrate his presence of mind completely, as a number of factors reduced the effectiveness of enemy surprise. First, radar reduced the effect of the enemy's initiative because Dowding could monitor German aircraft movements.²¹⁴ This fairly capable radar network was aided by ULTRA. Fighter Command's access to ULTRA reduced, but did not eliminate the possibility of surprise. According to Winterbotham, ULTRA was a bonus to Dowding he had not counted on, "...it gave him an invaluable overall picture of the enemy offensive and the strategy behind it. It also gave some indication of the enemy's true losses from the calls for replacement aircraft and crews by the various formations."²¹⁵ However, the actual targets were not assigned from higher headquarters and therefore were not picked up by ULTRA intercepts.²¹⁶ Hence, this factor remained an unknown until the enemy actually reached their targets. Additionally, during the final phase of the campaign, the Germans placed bombs on fighter aircraft; and Fighter Command could not anticipate which fighters had bombs and which did not. Overall, the evidence suggests that Dowding's mental capacity to handle the unexpected was not as severely tested as it might have been during the campaign due to the advantages of radar and ULTRA. Dowding's ability to work in concert with commanders of other services also tended to reduce the potential challenges to his own presence of mind.

Dowding demonstrated an ability to work in concert with the Anti-Aircraft Artillery Commander, Lt Gen Sir Frederick A. Pile. According to Dowding, "During active operations I consulted General Pile, and we acted according to our judgment."²¹⁷ These two men consulted one another on a daily basis²¹⁸ and coordinated very well as Dowding recalled, "...the antiaircraft guns, which were working under the immediate command of the army and the commanding artillery man, he was a Lt General and he lived in the next building to my headquarters and we discussed things every day and I really don't think we ever had a difference of opinion. We discussed what moves should be made...and the cooperation was really quite ideal."²¹⁹ An example of this cooperation was described by Dowding

No radio location apparatus was available at this time for inland tracking, and I turned to the Army, which had developed for use with guns a Radio Location apparatus known as the G.I. set. Within a limited range, (about 40,000 feet) this set could give very accurate position plots, and moreover, could read height to within plus or minus 1,000 feet at average ranges. General Pile realized the urgency of our need and made available about 10 sets...”²²⁰

Overall, the relationship between Pile and Dowding demonstrated Dowding's ability to work in concert with a military commander of another service during combat operations.

Dowding did not display superior intellectual abilities throughout his life. He was a very intelligent individual, but not outstanding.

In matters of scholarship Dowding was no match for his father, but he was an able worker and a good examinee....In 1899 he passed into the Royal Military Academy at Wollwich with sufficiently high marks to ensure that, if he held his place, he would qualify for a commission in the Royal Engineers...that corps--the traditional choice of men with brains....Dowding did not hold his place. The temptation to relax was strong.²²¹

Nonetheless, he did have the intelligence and aptitude required to become a pilot. He earned his pilot license after passing a flight examination with one hour and forty minutes of total flying experience during December 1913. He then learned how to fly biplanes at the Central Flying School at Brooklands. He flew Maurice-Farmans, Henry-Farmans, and Avros BE2As.²²² Essentially, Dowding was intelligent, but not brilliant.

Trait Observations Within the Moral Sphere

Dowding demonstrated his moral courage by accepting the job as the Chief of Fighter Command in July 1936. By virtue of his appointment, he was responsible for the well-being of many officers and men, and for the success or failure of operations which involved the safety of the state. His burden of moral responsibility included the future welfare of millions of his fellow citizens.²²³ He also demonstrated moral courage during the campaign.

After witnessing the German *Adler Tag* attack of the battle on 15 August 1940, Sir Winston Churchill, described the moral courage shown by Dowding as he accepted the responsibility for holding his fighters in reserve as the Germans attacked British shipping along the coast of England during the previous month. “At first Dowding even refused to

provide fighter cover for the coastal convoys..."²²⁴ He was accepting the moral responsibility for possible damage to shipping to conserve his fighters for later and more favorable engagements. This type of courage was not the only variety within Dowding's personality.

Although Dowding's courage to face personal danger was not tested during the campaign, he had demonstrated this type of courage during WWI. Following the Battle of Loos, 25 September 1915, when Dowding was the Commander of Number 16 Squadron at La Gorgue, France, he was tasked to determine if the Germans were in full retreat. The weather was horrendous with ceilings of 800 feet; and the area of interest was noted for very accurate anti-aircraft artillery fire. Dowding picked one of his best pilots to fly the mission and he went as the observer. Due to the low cloud ceiling the mission had to be accomplished by flying intermittently out of the clouds for brief observations as they dodged artillery fire. They found the Germans were not retreating and completed the mission.²²⁵

Following this incident Dowding demonstrated his personal courage during WWI again when Wing Headquarters sent the wrong propellers to his squadron. The staff insisted that the propellers were correct and ordered Dowding to arrange a trial flight by an aircraft modified to use the 'new' propellers. This was a very dangerous test as the hub of the propeller had to be bored out and fitted into newly drilled bolt-holes. This modification meant that the hub might break; and if it did, the tail would be cut off the pusher type aircraft. Dowding, choosing not to expose a subordinate to the danger, made the test himself.²²⁶ In short, Dowding demonstrated personal courage during WWI and this trait was not tested during the Battle of Britain. However, another form of courage, that roused by the intellect known as determination, was put to the test during the battle.

Dowding best demonstrated his determination when he asked the Air Ministry to arrange an audience with the Defense Cabinet so he could attempt to convince the leadership to stop the exodus of fighters from England in support of France. In this instance Dowding's insight generated his determination and provided strong direction to his will; he saved the precious

resources of his Fighter Command at a critical time. But just how strong was Dowding's will?

An individual's strength of will can be measured by evaluating four factors: strength of character, firmness, energy, and staunchness. The following observations suggest that Dowding was a man with a remarkable strength of will.

Dowding demonstrated his strength of character during one of the mass raids against England. According to Winterbotham's observation at Bentley Priory

...as the speed, height, and direction of the raids were plotted on the great table map below the balcony, Dowding would watch and give quiet orders to his controllers...The numbers of enemy aircraft were so vast that the plotters could only show such figures as eighty-plus or a hundred-plus...as the massed bombers and fighters swept towards the coast. Dowding was counting his fighters now in penny numbers and would order them up...perhaps twenty Spitfires to harry and break up a formation of a hundred bombers escorted by enemy fighters.²²⁷

This instance is a clear example of Dowding demonstrating an ability to keep his head during times of emotional stress.

Likewise, Dowding demonstrated firmness during the campaign when he held to his conviction of conserving his fighters for the ultimate defense of England. To demonstrate firmness, it is helpful to establish that an opinion is derived from reflection to establish that it is not subject to mere whim.²²⁸ In this case, Dowding acquired this opinion or belief well before the Battle of Britain. The origin of this idea stemmed from the limited finances Dowding expected to have available for his command. In Dowding's own words

Now in making my plans for the war which seemed to be very nearly inevitable....The point was we were very strictly limited by finance and I knew whatever else happened I would almost certainly be fighting against superior numbers in the defense of Great Britain. So, I tried to make it a cardinal plan of my policy that I would not fight outside the shores of Great Britain so far as home defense was concerned.²²⁹

From the outset of WWII he argued for conserving his fighters. According to Pile, "Dowding had only one thought: how he could retain sufficient fighter squadrons and anti-aircraft guns

to fight the battle which he so clearly foresaw was inevitable.”²³⁰ Pile also noted that Dowding “...only spoke of things that he had thought deeply over.”²³¹ During the campaign itself he continued his policy of conserving fighters even though he was under great pressure to support and defend British shipping during July 1940. Even his own pilots asked, “Why doesn't he let us have a go?” “But Dowding was adamant. The German radio interception service reported that British squadrons were being repeatedly instructed by ground control to refuse battle whenever an enemy formation was identified as fighters only.”²³² In short, Dowding's firmness had provided the necessary restraint to have fighters available to fight during the critical phases of the campaign.

He also provided some guidance as to when to exercise firmness. In a lecture to the Air War College on 9 February 1951, Dowding said, “You will be faced with a problem, how far to accept decisions which are imposed upon you by governments and ministries, and when the time comes you must stick in your toes and fight for your principles.”²³³ This sort of advice suggests a high degree of duty with little regard for one's career which is probably what motivated Dowding in his military performance.

Dowding's energy came from his sense of duty and patriotism. Both of these ideals were to serve as his personal motivation during the campaign. This notion is supported in his official biography

His brother officers made no mistake when they saw in him a man devoted to his duty and his country...one whose dearest wishes centered round his eagerness to serve the public interest. In the words of someone who knew him well, he was not forthcoming. There was some quality within him that was neither altogether pride nor modesty, but perhaps a combination of the two.²³⁴

His sense of duty is even more remarkable considering that the Air Ministry had asked him to retire twice before the campaign and once again on 14 July 1940. “Judging that he had been treated with discourtesy, judging also that his masters in Whitehall had failed to give him those wholehearted assurances of their confidence...he had long ceased to take pleasure in

gratifying the Air Ministry.”²³⁵ Also, since he was passed over for the Chief of the Air Staff during February 1937,²³⁶ he was not motivated by a sense of ambition. He simply wished to serve his country.

Whatever his own source of motivation, Dowding was able to motivate the people in his command to achieve astounding feats. Winterbotham summarized his perceptions when Dowding was ordered to retire, “I think that those who knew him and saw him in action during those days on the balcony above the ever-changing operations table down in the hole at Stanmore, and who experienced his real concern not only for his hard-pressed pilots but for everybody who worked for him...could not understand it either.”²³⁷ Additional evidence supports the results of his concern for people, “It is an attractive aspect ...that his staunchest supporters should be low-ranking subordinates who worked at his HQ, including his personal assistants and his office staff.”²³⁸ Dowding's concern for the morale of his people was reflected in his official report to the Air Ministry on 20 August 1941

When Squadrons became exhausted, obviously the most satisfactory way of reinforcement was by means of moving complete units, and this was done when time allowed....It soon became impossible to maintain the to-and-fro progress of complete unit personnel from end to end of the country, and the first limitation to efficiency which had to be accepted was...the transfer only of flying personnel and aircraft crews. This limitation was regrettable because it meant that officers and men were strange to one another...²³⁹

He elaborated on this concern at a lecture he presented the Air War College on 6 January 1953, “Well...I did that [the partial transfer] very reluctantly because of course it struck at the heart of squadron '*esprit de corps*,' the morale...”²⁴⁰

Although Dowding was taciturn, he still managed to motivate his people by taking care of them in his own way. If the pilots were considered the critical center of gravity for the RAF, then Dowding knew how to get the most out of this asset. “Although Dowding's concern for the fighter pilots was central to every decision he made, he seldom met them or talked with them, believing that the presence of the Commander in Chief would merely

provide an extra burden for them.”²⁴¹ Before the campaign, he knew that, “In terms of pilots, Fighter Command was about two hundred below establishment, and the problem of finding replacements was causing deep anxiety.”²⁴² Therefore, he was very concerned with their morale and he managed to keep it at a high level. He implemented a mandatory rotation policy for pilots in combat sectors that required twenty-four hours of leave per week.²⁴³ In short, Dowding's energy stemmed from his sense of duty and this inspiration drove him to care for all of his people.

Fortunately, Dowding never had his staunchness tested during the Battle of Britain as he never suffered any significant personal loss during the conflict.

Trait Observations Within the Physical Sphere

Dowding did not display a sense of genius for his own physical well being. As he stated, “...almost every fine night during the Battle of Britain I was out in a barge down with these technical operations....where these experiments were going on, so that, of course, made a double strain on me...”²⁴⁴ He chose not to rest, and according to Winterbotham, when Dowding let Leigh-Mallory criticize both Park and himself at an Air Ministry meeting on 17 October 1940, “To those who knew him, Dowding had aged rapidly during those critical six months of the war...it was a measure of his tiredness...”²⁴⁵ In short, the evidence suggests that the 59 year old Dowding did not pay sufficient attention to his own health and physical well being during the campaign.

Summary of Trait Observations

So, how does this case study help answer the question of defining the elements of genius for operational level air commanders? Dowding clearly demonstrated the following cognitive traits: an ability to operate outside the rules, objectivity, *coup d'oeil*, knowledge of the capabilities of one's people and material resources, and an ability to work in concert with commanders of other services. The evidence indicates that he was intelligent but not brilliant. His presence of mind was not fully tested because much of the possibility of operational surprise was removed due to having radar and access to ULTRA. In terms of

judgment he was discriminating and sensitive except for when it came to his own physical well-being. Dowding clearly demonstrated the following moral traits: moral courage, determination, strength of character, firmness, and energy. His personal courage and staunchness were not tested during the battle. Within the physical sphere he completely ignored his own physical well-being and he let his sense of duty override good judgment when rest was needed. For Dowding, during the Battle of Britain, the traits herein described represent his harmonious combination of elements for genius of air command at the operational level of war.

Concluding Observations

A comparison of the traits demonstrated by Dowding with those discussed in the theory for surface command genius shows significant overlap. The common cognitive traits for this case include the following: an ability to operate outside the rules, judgment, an ability to work in concert with commanders of other services, objectivity, *coup d'oeil*, and knowledge of the capabilities of one's people and material resources. The single unique cognitive characteristic demonstrated that is not in common with the theory of surface command genius is a subset of judgment and it is the ability to use a form of air *aufstragtaktik*. Also, his presence of mind was not completely tested because the effect of surprise was diminished due to having radar and access to ULTRA. Lastly, Dowding was an intelligent officer, but not necessarily brilliant.

The common moral elements are moral courage, determination, strength of character, firmness, and energy. Dowding did not demonstrate his personal courage during the campaign, but he did display this courage at earlier times in his career. Also, Dowding's staunchness was not tested during the campaign. Within the element of energy, his motivation did not come from ambition, but rather from a sense of duty or patriotism.

Within the physical sphere, Dowding did not display a genius for maintaining his fitness. Nonetheless, he did manage to perform effectively throughout the entire six months of the campaign. It is not clear how long he could have continued the campaign if he that had been

required. Nonetheless, this may imply that Dowding was able to ignore his physical fitness requirements because of other factors, such as by delegating authority to lower levels for operations thereby making operations less dependent upon himself.

Dowding also revealed some of his views on studying the history of campaigns. He felt that campaigns should not be studied too closely for technical details as the next conflict will most likely have different technologies. He also warned the officers at the Air War College in 1951 that their challenge would be the process of adapting to the next conflict given the existing resources and preparations on hand when the conflict started.²⁴⁶

⁹³ Vincent Orange, A Biography of Air Chief Marshal Sir Keith Park (London: Methuen London, 1984), 118.

⁹⁴ Sir Winston S. Churchill, Their Finest Hour (Cambridge, Mass.: The Riverside Press, 1949) 340.

⁹⁵ Basil Collier, The Battle of Britain (New York: The Macmillan Company, 1962), 164

⁹⁶ F. W. Winterbotham, The Ultra Secret (New York: Harper & Row Publishers, 1974), 4.

⁹⁷ *Ibid.*, 36.

⁹⁸ General Field Marshal Albert Kesselring, A Soldier's Record (New York: William Morrow & Company, 1954) Trans. Lynton Hudson, 68.

⁹⁹ Derek Wood with Derek Dempster, The Narrow Margin (Washington D.C.: The Smithsonian Press, 1990), 158.

¹⁰⁰ Basil Collier, The Battle of Britain, 165.

¹⁰¹ Cajus Bekker, The Luftwaffe War Diaries (London: MacDonald & Co. Publishers, 1966) Translated by Frank Ziegler, 132.

¹⁰² Wood and Dempster, 158.

¹⁰³ Walter Warlimont, Inside Hitler's Headquarters: 1939-45, trans. R.H. Barry (New York: Frederick A. Praeger, Publishers, 1964), 107.

¹⁰⁴ Peter Fleming, Operation Sea Lion (New York: Simon & Schuster, Inc., 1957), 43.

¹⁰⁵ Warlimont, 107.

¹⁰⁶ Fleming, 43-49.

¹⁰⁷ Asher Lee, Goering: Air Leader (New York: Hippocrene Books Inc., 1972), 91-2.

¹⁰⁸ Dr Eugene M. Emme, "An Analysis of Air Defense in WWII," 19 January, 1954, Lecture at the Air War College, Maxwell AFB, Ala., (Maxwell AFB, Ala.: USAF/HRA, January 1954), 9, 0047981 K239.0422-6.

¹⁰⁹ Warlimont, 108.

¹¹⁰ Kesselring, 67-70.

¹¹¹ Richard Collier, Eagle Day: The Battle of Britain (New York: E.P. Dutton & Co., 1966), 288, 292.

¹¹² Dr. David R. Mets et al, The Second World War: Europe and the Mediterranean, ed. Thomas E. Griess for the Department of History, USMA, West Point, New York (Wayne, N.J.: Avery Publishing Group, 1984), 65.

¹¹³ Director of Intelligence, Headquarters, Ninth Air Force, Intelligence Summary Report No. 147, "Galland Report" (Maxwell AFB, Ala.: USAF/HRA, 27 August, 1945), 30, 520.056-193.

¹¹⁴ Mets et al, 65.

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- ¹¹⁵ Adolph Galland, The First and the Last: The Rise and Fall of the German Fighter Forces, trans. Mervyn Savill (New York: Henry Holt and Company, 1954), 21.
- ¹¹⁶ Mets et al, 65.
- ¹¹⁷ Galland Report, 23.
- ¹¹⁸ Galland, The First and the Last: The Rise and Fall of the German Fighter Forces, 23-24.
- ¹¹⁹ Galland Report, 23.
- ¹²⁰ Wood and Dempster, 149.
- ¹²¹ Ibid., 358. Total calculated based upon data in Appendix 24.
- ¹²² Ibid., 348. Figures computed from available data in Appendix 11.
- ¹²³ Horst Boog, Die Deutsche Luftwaffenführung 1935-1945 (Stuttgart, Germany: *Deutsche Verlags-Anstadt*, 1982), 27.
- ¹²⁴ Williamson Murray, Strategy for Defeat: The Luftwaffe 1933-1945, (Maxwell AFB, Ala.: Air University Press, 1983), 51. Figures derived from table 8 are based on quartermaster returns in BA/MA RL 2 III/708 and 709.
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- ¹⁹⁹ Winterbotham, 49-50.
- ²⁰⁰ Churchill, 324.
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- ²⁰² Winterbotham, 58.
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- ²⁰⁴ *Auftragstaktik* is a German term that today is generally interpreted as a form of "mission-type order." The German army used the commander's intent (*Absicht*) and then the commander assigned tasks (*Aufträge*) to subordinate units to carry out his intent. The subordinate commander decided upon a specific course of action which became his resolution (*Entschluss*). The German field manual of WWII, *Truppenführung*, stated that a subordinate commander could change or abandon his task within the framework of the higher commander's intent. It was this ability to separate the commander's intent from the task and resolution of the subordinate commanders that created the flexibility and initiative of the German commanders during WWII. (See Dr Daniel J. Hughes, "Abuses of German Military History," Military Review, (December, 1986), 67-8.)
- ²⁰⁵ Dowding, "Analysis of the Battle of Britain," 9 February, 1951, 25.
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Chapter 4 Spruance: In Command at Midway

This chapter analyzes Rear Adm Raymond A. Spruance during the Battle of Midway. He clearly achieved significant results with limited resources. Spruance was facing a vastly superior Japanese force during the Battle of Midway at a desperate time in the Pacific Theater. Although Spruance was a non-aviator who had not previously been aboard an aircraft carrier,²⁴⁷ his command decisions during the Midway air operation led to a major turning point in the Pacific War. Whether or not he demonstrated elements of genius for air command at the operational level requires further analysis. At this point, however, it is possible to conclude that the results were not the product of superior resources.

Operational Summary of the Midway Operation

This operation took place approximately 1,300 miles northwest of Honolulu during the period 3-6 June 1942.²⁴⁸ The contributions made by American airpower during this operation were critical for success; and the man who led those efforts, Rear Adm Raymond A. Spruance, won the first clear cut US airpower victory against the Japanese during WWII.

Midway Situation

In the spring of 1942, with the Western Pacific firmly under their domination and alarmed at the vulnerability demonstrated by Doolittle's raid on Tokyo, the Japanese decided to complete the unfinished work of Pearl Harbor by destroying the American carriers. Adm Isoroku Yamamoto, CINC of the Combined Japanese Fleet, was responsible for orchestrating the Battle of Midway. The Imperial Japanese Naval staff wanted to pursue objectives in the Southwest Pacific Theater to cutoff logistics coming from the US to Australia and the Allied forces there.²⁴⁹ According to Yamamoto's chief of staff, Rear Adm Matome Ugaki, Yamamoto ordered him to, "...develop a plan centering on the capture of Midway Island, the prime purpose to bring a decisive naval engagement between the two naval forces. Thus, the selection of Midway as the first target of the second phase operations was predicated on the expectation that this would be

the most likely threat to bring out the American forces.”²⁵⁰ Additionally, Yamamoto hoped that “...the Japanese could force the US to enter a negotiated peace and leave them with vast resources for which she battled during the last six months.”²⁵¹

The Midway Plan

The Japanese devised a plan that included three independent forces: the Mobile Force with four large carriers, commanded by Adm Chuichi Nagumo; the Main Body Force, commanded by Yamamoto; and the Occupation Force, commanded by Vice Adm Nobuaki Kondo. (See appendix C for the precise composition of these forces.) The assigned tasks of the Mobile Force were to destroy the enemy fleet by decisive naval action and support the Occupation Force by air attacks on Midway forces. The tasks of the Main Force were to destroy the enemy fleet by decisive naval action, support the Mobile Force from a position to the west, and support the Occupation Force. The mission of the Occupation Force was to capture and occupy Midway.²⁵² Yamamoto also ordered Nagumo to keep at least half of the level bombers armed with torpedoes. This verbal directive was stated as a result of the war games conducted 1-5 May 1942.²⁵³

The original American plan, in response to the Japanese offensive, called for Rear Adm William Halsey to command the American task forces, but because Halsey was hospitalized with a debilitating skin rash, Adm Nimitz chose Spruance to command Task Force 16. This force consisted of two carriers, the *Enterprise* and *Hornet*; six cruisers; and twelve destroyers. Rear Adm Jack Fletcher was to command Task Force 17, comprised of the damaged carrier *Yorktown*, two cruisers, and six destroyers. Fletcher was to exercise tactical command of both task forces, and would be responsible for coordinating the combined task force operations.²⁵⁴ Additionally, 19 US submarines participated in the operation as a tactical element of the surface force.²⁵⁵

The island of Midway was defended by 3,632 men on the morning of 4 June 1942, under the overall command of Commander Cyril T. Simard.²⁵⁶ The commander of all land-based airpower was Commander Logan C. Ramsey. He controlled 118 aircraft comprised of 30

Catalina seaplanes, seven F4Fs, six Grumman TBFs, 17 Army B-17s, four B-26s, and numerous Marine SB2U Vindicators and Brewster Buffaloes.²⁵⁷

Based on outstanding intelligence reports, Nimitz knew the approximate composition of enemy forces, the objective of the enemy attack, and the direction of the attack.²⁵⁸ Good work by cryptanalysts had given Nimitz accurate and timely warning.²⁵⁹ Based on this intelligence, Nimitz directed Task Forces 16 and 17 to patrol in a position 125 miles northeast of Midway. Spruance and Fletcher were operating under the provisions of a letter from Nimitz which stated, “You will be governed by the principle of calculated risk, which you shall interpret to mean the avoidance of exposure of your force without good prospect of inflicting, as a result of such exposure, greater damage to the enemy.”²⁶⁰ Although Nimitz issued written orders to all US forces to hold Midway, he told Spruance not to hold Midway at the cost of the US carriers, which he deemed more precious than Midway itself.²⁶¹

Weather played a key role in the Midway conflict. On the morning of 4 June 1942, the Japanese Mobile Force was approaching the Midway area from the northwest under the cover of a cold front. Behind this front were lower-level broken clouds with scattered showers and a variable ceiling between 1,000 and 2,300 feet. At the front itself, an area of overcast prevented effective scouting by US scout planes operating from Midway. On the other hand, the US strike force was in an area where the sky was cloudy with high broken and lower scattered clouds. Ceilings were unlimited over their area but lowered to 1,000 feet in a westerly direction.²⁶²

Midway Execution

The Japanese launched the initial attack on Midway at 0430 on 4 June when their carriers were 240 miles northwest of the island.²⁶³ Although this attack effectively eliminated almost all offensive land-based air operations for the remainder of the operation,²⁶⁴ the Midway defenders were able to launch piecemeal attacks against the Japanese carriers before the Japanese struck Midway.

Land-based airpower from Midway Island made the first four strikes against the Japanese carriers on the morning of 4 June. Between 0705 and 0830 the Mobile Force was under attack by

Midway planes. None of these strikes were coordinated with attacks from the carrier-based aircraft; and according to Japanese records, no hits were made.²⁶⁵

Following the initial US attacks, at 0715 Nagumo ordered crews on the carriers *Akagi* and *Kaga* to rearm bombers for the next attack wave with 800 kilogram bombs in place of torpedoes for another strike on Midway.²⁶⁶ At 0728, the Japanese scout plane *Tone* flashed a message to the Mobile Force indicating that 10 enemy ships had been spotted.²⁶⁷ At 0745²⁶⁸ Nagumo disregarded Yamamoto's standing orders and directed, "Planes in second attack wave....Re-equip yourselves with bombs."²⁶⁹ Between 0738 and 0918 the Japanese carriers were recovering planes from the Midway strike. Once recovered, the planes had to be lowered below the flight deck and the planes scheduled for the next attack, which was to be on Midway, were brought up on deck. This process was time consuming, but it was made even more lengthy and difficult by the radical evasive maneuvers which the Mobile Force was forced to make during the US attacks.²⁷⁰ These air strikes were supported by simultaneous submarine attacks of the *Nautilus*.²⁷¹

A significant incident occurred at 0824 when the US submarine *Nautilus* fired two torpedoes at a battleship the Mobile Force.²⁷² According to Lt Commander W. A. Brockman, commander of the *Nautilus*, "The picture presented on raising the periscope was one never experienced in peacetime practice. Ships were on all sides, moving across the field of view at high speed and circling away to avoid the submarine's position."²⁷³ Brockman selected what may have been either of the battleships *Haruna* or *Kirishima*.²⁷⁴ The Japanese destroyer *Arashi* was dispatched to suppress the submarine. When that immediate task was accomplished, the *Arashi* steamed at full speed to catch the fleet, creating an arrow in the sea that pilots of American attack aircraft would spot later that morning.²⁷⁵

Meanwhile, back at the American task forces, Spruance and Fletcher were piecing together the situation. At 0545 a Midway search plane reported enemy planes closing on Midway from the northwest at a distance of 150 miles. At 0603 Spruance received confirmation of two carriers heading for Midway at a range of 180 miles. After plotting the contact and authenticating

the report, Spruance ordered Capt Miles S. Browning to launch all available aircraft at the first opportunity for them to attack the Japanese Fleet.²⁷⁶ In order to determine the precise launch time that met Spruance's guidance, Browning considered many complex factors including the relative motion of the two opposing forces, wind velocity and direction, possible inaccuracies in the reported enemy position, payload and fuel capacity of the US planes, the time needed to man and start the planes, the time interval between the launch of the first and last planes of the attack group, and time required to flash the launch message to the *Hornet*. Based on these calculations, Browning recommended a launch time of 0700, which Spruance accepted.²⁷⁷ At 0705 the *Enterprise* turned into the southeast wind and started the launch. By 0806 the last plane had left the *Enterprise*,²⁷⁸ the *Hornet* completed her launch shortly thereafter.²⁷⁹

The first attack against the Japanese by US carrier aircraft at 0927 was a disaster. Japanese fighters attacked the aircraft at will since the squadron was flying without fighter cover. All 15 aircraft of Torpedo Squadron Eight from the *Hornet* and 10 of 14 aircraft of the *Enterprise* were shot down with no damage to the Japanese carriers. As the Japanese were more concerned about the torpedo than the dive bombers threat, they kept their fighters in patrols at lower altitudes.²⁸⁰ Although Spruance felt badly about these losses, his will was not broken, and he launched a second attack later that afternoon.

The first hits on Japanese carriers came from the dive bombers of the *Yorktown* and *Enterprise* at 1022.²⁸¹ Commander C. Wade McClusky Jr., of the *Enterprise* spotted the destroyer *Arashi*²⁸² at approximately 1000²⁸³ and followed it to the Mobile Force. If McClusky had not seen the *Arashi* and made a very good decision, the entire battle may have turned out much differently. Chance was in working in Spruance's favor. Within 10 minutes the carriers *Kaga*, *Soryu*, and *Akagi* were damaged severely. Only the *Hiryu* escaped attack; it launched 18 bombers and six fighters to attack the *Hornet*. This attack formation scored three hits on the *Yorktown*.²⁸⁴

The second and final attack by *Hiryu* began with a 1331 launch against the *Yorktown*. This attack formation included 10 torpedo planes and six fighters. The *Yorktown* was attacked at

1441 and received two severe hits. Planes from the *Hornet* and the *Enterprise* attacked the *Hiryu* at 1701 and scored four hits.²⁸⁵

By 1715 Spruance was effectively the Officer in Tactical Command (OTC) because Fletcher had abandoned the *Yorktown* and transferred to the cruiser *Astoria*. While on the cruiser, Fletcher signaled to Spruance, “Will conform to your movements.” Spruance interpreted this response as a transfer of OTC.²⁸⁶ Spruance chose to avoid a night engagement and proceeded east at 1915.²⁸⁷

Through the night, Spruance directed his forces to stay close to Midway for possible attacks in the morning. The dawn of 5 June brought bad flying weather and no reports of an impending attack on Midway Island. By mid-morning Spruance assumed the Japanese would not attack Midway; he then chose to seek and destroy the retreating fleet.²⁸⁸ The Japanese fleet consisted of two groups, one west and one northwest. Spruance chased the northwest group which had a burning Japanese carrier and two battleships. He launched an attack at 1500, but the aircraft were unsuccessful in attacking two small ships. Although the aircraft had to make night landings, all but one aircraft returned safely. Spruance then chose to head west since the weather was becoming progressively worse to the northwest. He was hoping that the Japanese naval force would head west as well, thinking the Americans would continue the chase into the northwest.²⁸⁹

On the morning of 6 June search planes from the *Enterprise* spotted what was reported to be two groups of Japanese battleships, cruisers, and destroyers 130 miles to the southwest. Over the course of the morning the *Hornet* and *Enterprise* attacked a single group of two cruisers and destroyers. Although the aircraft were making successful hits with bombs, the ships were not sinking. Spruance also ordered McClusky to lead the remaining three Devastator torpedo bombers (TBD) in an attack unless there were enemy guns firing. As Spruance had already lost 37 of these torpedo bombers he was not willing to put his remaining TBDs at high risk. When the torpedo bombers arrived in the target area, enemy guns were still firing and the torpedoes were not used. Hence, none of the bombed ships were sunk. As the day came to an end, Spruance's forces were approaching the 700 mile radius of Wake Island where land-based

Japanese airpower could have attacked him on one-way missions. Since his destroyers were low on fuel and his pilots were exhausted after three days of trying combat, Spruance decided to end the operation and turn northeast to refuel his destroyers.²⁹⁰

Midway Results

The results were significant. Table 3 provides a detailed summary of the damage done to the American forces and table 4 provides similar data for Japanese forces. According to a 1948 Naval War College Analysis of the Battle of Midway

The Battle of Midway was...an overwhelming American strategical and tactical victory...By destroying four of Japan's finest aircraft carriers together with many of her best pilots it deprived the Japanese Navy of a large and vital portion of her powerful carrier striking force; it had a stimulating effect on the morale of the American fighting forces;...it put an end to Japanese offensive action which had been all conquering for the first six months of war; it restored the balance of naval power in the Pacific which thereafter steadily shifted to favor the American side...²⁹¹

In short, Spruance's forces had sunk four Japanese carriers at the expense of one of his own.

Trait Observations of Rear Admiral Spruance During the Midway Operation

Spruance faced an unprecedented situation at Midway. According to Dr Robert Barde, whose dissertation was entitled, "The Battle of Midway: A Study in Command"

The carrier changed naval warfare as nothing else had done since the introduction of the steam engine and the iron hull. Under the new concept, the commander could bring his forces to the area; he could plan their employment, but once committed he could do little to influence the tactical situation of the battle. The on-the-scene decisions had to be delegated to a junior commander, such as a rear admiral commanding a task force...²⁹²

Table 3 Summary of US Losses During the Battle of Midway

4 June

Surface Vessel Damage

1 Aircraft Carrier Damaged -- *Yorktown*

4 June

Army--Midway Based -- 2 lost

Aircraft Damage = 126 aircraft lost

Marine--Midway Based -- 28 lost

Carrier type--Midway Based -- 7 lost

Carrier type -- Navy Carrier -- 89 lost

5 June

Army--Midway Based -- 2 lost

Aircraft Damage = 5 aircraft lost

Marine--Midway Based -- 1 lost

Carrier type -- Navy Carrier -- 2 lost

6 June Surface Vessel Damage

1 Destroyer sunk -- *Harnann*

1 Aircraft Carrier damaged -- *Yorktown*

6 June

Aircraft Damage = 1 lost

Carrier type -- Navy Carrier -- 1 lost

7 June

Surface Vessel Damage

1 Aircraft Carrier sunk -- *Yorktown*

Cumulative Aircraft Lost

132

Cumulative Personnel Lost

307

Source: “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis”, NAVPERS 91067 (US Naval War College, Newport, R.I., 1948), Appendix 3, vii-viii.

Table 4 Summary of Japanese Losses During the Battle of Midway

4 June	2 Aircraft Carriers sunk -- <i>Kaga & Soryu</i>
Surface Vessel Damage	2 Aircraft Carriers damaged -- <i>Akagi & Hiryu</i>
	1 Tanker damaged -- <i>Akebono</i>
4 June	48 carrier type -- shot down
Aircraft Damage	186 carrier type -- lost on carriers/ ditching at sea
5 June	2 Aircraft Carriers sunk -- <i>Akagi & Hiryu</i>
Surface Vessel Damage	1 Heavy Cruiser damaged -- <i>Mikuma</i>
6 June	1 Heavy Cruiser sunk -- <i>Mikuma</i>
Surface Vessel Damage	1 Heavy Cruiser damaged -- <i>Mogami</i>
	2 Destroyers damaged -- <i>Arashio & Asashio</i>
Cumulative Aircraft Lost	234 carrier type
Cumulative Personnel Lost	2500 men

Source: “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis,” NAVPERS 91067 (US Naval War College, Newport, R.I., 1948), Appendix 3, vii-viii.

Spruance, a competent leader but advised by an unfamiliar staff that had been assembled by Halsey, was such a commander in charge of Task Force 16 with absolutely no carrier experience.²⁹³ Although he had access to Magic intelligence, which provided strategic warning of the Japanese attack, he clearly faced cognitive and moral challenges.

Trait Observations Within the Cognitive Sphere

Spruance best demonstrated a sensitive and discriminating judgment during the morning of 4 June when he decided to launch all of his attack aircraft as soon as he possibly could to engage the enemy carriers. In his words, "I wanted to hit the Japanese carriers as early as possible with all the air strength we had available for this purpose."²⁹⁴ In reaching this decision, he had to consider many different factors. First, the weather was poor to the west. He also knew from morning reports of 3 June from Midway patrol planes that the Japanese Invasion Force was 700 miles west southwest of Midway. At 0534 on 4 June a Midway search plane reported that the enemy carriers were near, but did not specify their exact location. At 0545 the same search plane reported numerous enemy planes approaching Midway 150 miles from the northwest.²⁹⁵ At 0603, "...the enemy was bearing 247 degrees, distant 175 miles from TF 16; air action was imminent."²⁹⁶ At this time, Spruance plotted the enemy reports on his maneuvering board and ordered Browning to "launch the attack."²⁹⁷ This directive was a form of mission-type order that Browning the flexibility to work out the details of the launch, including the precise time to launch, which he recommended be 0700. At that time, Spruance estimated the Japanese Mobile Force was bearing 239 degrees at a distance of 155 miles, 20 miles within the 175 mile radius of his torpedo bombers. The carriers had to turn into the prevailing southeast wind to launch which happened to be in the opposite direction of the reported enemy sightings. At 0705, Spruance commenced launching his attack groups from both his carriers. The order of launching was, (1) fighters for combat air patrol, (2) dive bombers, (3) fighters to accompany the torpedo planes, and (4) torpedo planes. The last plane left the *Enterprise* at 0806.²⁹⁸ It is interesting to note that Spruance ordered McClusky to attack with the bombers aloft at 0745,²⁹⁹ before the torpedo planes were airborne.

He also demonstrated good judgment and an ability to work outside the rules on the night of 5 June when he decided to turn on the lights for the returning attack aircraft.³⁰⁰ The planes were searching for the fourth Japanese carrier, but only found two small ships and their ensuing attacks were unsuccessful. As these planes had flown to their maximum range, they were very low on fuel and would have to land immediately. However, it was standard procedure to keep the

carrier blacked out during night operations to prevent sightings by enemy submarines. Nevertheless, Spruance chose to allow the use of navigational beacons and to illuminate the flight decks. This decision demonstrated good judgment because

In his view a carrier without its aircraft was disarmed and impotent, a liability and not an asset...He later explained that if planes are to be flown so late in the day that a night recovery is likely, and if the tactical situation is such that the commander is unwilling to do what is required to get the planes back safely, then he has no business launching the attack in the first place.³⁰¹

Indeed there was some risk associated with lighting up the carriers if enemy submarines had been in the area. In this instance, good fortune was on Spruance's side. Nevertheless, for a rear admiral new to carrier warfare to violate one of its more significant canons demonstrated a certain amount of moral courage, a secure good judgment, and an ability to operate outside established conventions. This action also demonstrated his concern for the morale of his pilots as they would have had to bail out into the sea during the night if he did not turn on the lights.

Spruance also demonstrated good judgement by using a form of air *Auftragstaktik*. He let his subordinate commanders run the details of the air operations. He clearly demonstrated this on the morning of 4 June when he told Capt Browning to launch the fleet, and yet he let Browning determine the actual launch time. In short, he gave Browning his intent, and let the subordinate develop a course of action.

Spruance demonstrated his presence of mind during the launch on the morning of 4 June. As this was his first major launch of attack aircraft under his command, he was a bit surprised at how long it was taking to assemble the attack formation. After watching the launch operation for 40 minutes, he ordered McClusky, the *Enterprise* air group commander, to proceed with the attack aircraft then aloft. He wanted to get something headed toward the Japanese without further delay.³⁰²

There is, however at least one instance in which Spruance failed to demonstrate his presence of mind, or an increased capacity to handle the unexpected. During the afternoon of 4

June, his failure to send out additional search planes delayed the attack on the Japanese carrier *Hiryu*. If that carrier had been found earlier, the Japanese may not have been able to hit the *Yorktown* a second time later in the afternoon. Spruance chose to delay an immediate reattack after the morning missions until, "...he knew the exact location of the fourth carrier...he would accept the risk of being attacked in the interim."³⁰³ Delaying the attack may indeed have been reasonable since the planes had to be refueled and rearmed, but the oversight not to send out additional search planes seems illogical. It is true that Fletcher and the *Yorktown* had the responsibility for defensive fighter patrol and search planes. These responsibilities were previously established between the two task forces.³⁰⁴ However, Spruance knew that the *Yorktown* was hit hard, "...Spreuance had no way of knowing how badly she was hurt."³⁰⁵ Therefore, it would seem to be illogical not to send out additional search planes considering that the *Yorktown* may not have been operational. Additional evidence available to Spruance included the *Yorktown* aircraft recovering on the *Enterprise*. Indeed, the *Yorktown* was, "...ablaze and crippled, could not operate aircraft."³⁰⁶ By not aggressively looking for the enemy, he effectively delayed the reattack against the *Hiryu*. As Spruance waited until he knew the exact location of the fourth carrier, a second attack against the *Yorktown* took place at 1441 in which the Japanese scored an additional two hits and forced Fletcher to abandon ship.³⁰⁷

Although Spruance would work in concert with other commanders, such as Maj Gen Holland M. Smith, a Marine officer, during his subsequent operations in the central Pacific, he did not demonstrate an ability to work in concert with commanders of other services during the Battle of Midway. He did not ensure that land-based air attacks were coordinated with carrier-based attacks, nor were carrier-based attacks coordinated between task forces. The Midway Island air commander, Commander Ramsey; Fletcher of Task Force 17; and his own air commanders of Task Force 16 were acting independently without knowing what the other commanders had in mind. This lack of coordination and planning allowed the Japanese fighters to attack the US planes sequentially. Hence, the fighters defending Japanese surface vessels could concentrate on the land-based attacks, recover, and prepare for the carrier-based attacks.

On the morning of 4 June the Mobile Force suffered no losses from land-based air attacks. Additionally, the actual attacks by the *Enterprise* and *Yorktown* aircraft did not have procedures to coordinate attack responsibilities and just happened to select different carriers as they were rolling in on their targets from 20,000 feet. “By chance, the dive bombers attacked different carriers even though their takeoffs were over eighty minutes apart and from different carriers.”³⁰⁸ Although it is clear that Spruance nor anyone else could not have selected precise predetermined targets in such a fluid environment, it is not too far fetched to have the carrier-based aircraft on the same radio frequency to at least communicate their final attack heading and target before rolling in on the carriers. Nonetheless, the *Hiryu* was not attacked on the initial strike and this carrier launched aircraft that attacked and damaged the *Yorktown*.

The admiral demonstrated his *coup d'oeil* when he decided to head east on the night of 4 June. This was a very difficult decision to make as Spruance considered many factors to include: time, space, force, the mission, and the enemy capabilities. According to Spruance

I was faced with the problem of what to do during the coming night. We had to keep moving because of the possible presence of submarines. Our primary mission was still to prevent the capture of Midway. We did not know whether the enemy would continue with the task or whether the loss of his three carriers and the damage we had inflicted on the fourth would cause him to give up the attempt. Should I continue to steam west? If I did this, we would run the risk of a gun engagement during the night with possibly superior forces, at a time when our two aircraft carriers could not operate and would be a source of weakness rather than strength to us. The Japanese were believed to have had two fast battleships with their carrier force. The Japanese were reputed to be well trained in night gunnery and in night destroyer attacks. Since I was uncertain whether the enemy would attempt his landings on Midway on 5 June, I wanted to be able to furnish air support to its defenders.³⁰⁹

Accordingly, at 1915, Spruance set a due easterly course.³¹⁰ Spruance was well aware of the capabilities of the Imperial Japanese Navy, as he had participated in many war games at the Naval War College both as a student and as an instructor.³¹¹ It is clear now that Spruance's very considered judgment in this complex situation was informed by a good deal of prior study and reflection.

How does one know that turning eastward was correct? According to the 1948 Naval War College study of the battle, “This decision of CTF 16 to retire to the east at this time has been the subject of much controversy, but in view of the Japanese intent which we now know there can be no longer be doubt that the decision was correct....the Japanese were assembling strong surface forces to destroy CTF 16 in night action should he move westward during the night”.³¹² The commander of the Japanese Second Fleet issued the following dispatch, “The main unit of the Second Fleet plans to be in position by 0300 5 June. Thereafter it plans to search for the enemy to the east and participate in a night engagement in accordance with Mobile Force SECRET Dispatch 560.”³¹³

On the afternoon of 5 June, Spruance demonstrated objectivity as his task force closed on a Japanese convoy headed northwest. Capt Miles Browning, his Chief of Staff and principal aviation adviser, developed an attack plan that recommended a 1400 launch with dive bombers armed with 1,000-pound bombs. Initially, Spruance approved the attack plan and the orders went to the respective squadron commanders.³¹⁴ According to Rear Adm Clarence W. McClusky, at the time a Lt Commander and *Enterprise* air group commander, “...I proceeded to the Flag Bridge--explained that the load was too heavy, the range too great--the planes would not make it back. Spruance agreed and said, 'I will do what you pilots [McClusky's pilots] want.' Subsequently, the *Enterprise* planes loaded 500-lb bombs and delayed takeoff until 1500.”³¹⁵ Spruance was willing to listen to McClusky, changed his mind and then extended the range of his dive bombers even though he had already approved Browning's previous plan.

Although he had only been on the *Enterprise* since 26 May, Spruance knew the capabilities of his own men and material resources. One of the major factors influencing his decision to end the Battle of Midway on 6 June was the,”...status of his personnel, especially the pilots. The strain of the past few days were severe including the strain on the maintainers.”³¹⁶ “Spruance decided to end the battle.”³¹⁷ “For Task Force 16, the Battle of Midway was over. At 1907 the ships altered course to 050 degrees and headed for refueling.”³¹⁸

Spruance displayed a superior intelligence. "Fleet Adm Ernest J. King, the wartime Chief of Naval Operations, considered that Spruance was the most intelligent flag officer in the USN."³¹⁹ Based on a 1965 interview with Adm Chester Nimitz, Dr Robert Barde paraphrased one of his responses, "The Fleet Commander knew him well, realized that he [Spreuance] was a non flyer but was equally aware of his outstanding ability....Admiral Spruance was as intelligent and as professionally well rounded as any officer in the service."³²⁰ Another measure of Spruance's superior intelligence is reflected in his academic performance as a student at Newport and subsequent selection to the Naval War College staff. According to Lt Commander Thomas Buell, author of Spruance's most comprehensive biography, "During his eleven months as a student he had established a reputation as an intelligent, articulate, scholarly officer highly motivated for the study of naval warfare. These qualities impressed others as being highly desirable for a War College staff officer, and he would twice return to the Naval War College before being called to the war in the Pacific."³²¹

A final observation within the cognitive sphere is worth noting. Spruance has been described as taciturn, especially when approached by reporters. He states that this behavior was intentional

Personal publicity in a war can be a drawback because it may affect a man's thinking....His fame may not have gone to his head, but there is nevertheless danger of this. Should he get to identifying himself with the figure as publicized, he may subconsciously start thinking in terms of what his reputation calls for, rather than of how best to meet the actual problem confronting him. A man's judgment is best when he can forget himself and any reputation he may have acquired, and he can concentrate wholly on making the right decision.³²²

In short, in order to keep his thinking impersonal and objective, Spruance consciously and deliberately eschewed the limelight. At a time when Halsey's name was bannered across the headlines of almost every major American Newspaper, Spruance's deliberate modesty is the mark of exceptionally dispassionate intellect. Yet, in his own way he had deep concern and for his men and machines.

Trait Observations Within the Moral Sphere

As a surface combatant commander, Spruance displayed distinct moral courage when he accepted command of Task Force 16. He knew he was going into battle outnumbered, with no previous carrier experience and with a new staff. According to an interview with Spruance on 3 June 1968, “He knew what Yamamoto had.”³²³ He realized the Japanese Admiral had the largest sea armada ever assembled in the Pacific to that date. (See appendix C for a detailed description of those forces.) Yet, Spruance said that, “...the responsibility of wartime command never bothered him.”³²⁴ He also demonstrated the courage to accept additional responsibility during the night of 5 June as he decided to turn on the lights for the returning attack aircraft.³²⁵ Spruance decided to take a calculated risk and try to bring in his carrier aircraft. If submarines were in the area, he risked losing his surface vessels as well as his aircraft. However, in this case his courageous decision saved his carrier aircraft without suffering an enemy submarine attack. These are two representative examples of the high degree of moral courage displayed by Spruance during the operation.

The admiral's personal courage was not tested during the Battle of Midway. Although he was in a combat zone on board the *Enterprise* with known enemy submarines in the area, his flagship was never directly attacked. However, there is evidence from later campaigns that suggests Spruance had personal courage. The following excerpt of a *Kamikaze* attack of 12 April 1945: by Dr Willcutts, Fifth Fleet Medical Officer on board the *New Mexico*, reveals something of Spruance's personal courage

General Quarters. I looked about and saw our staff disappearing very properly under gun turrets or any protective 'foxhole' available. Admiral Spruance never moved and kept his glasses glued to his face following the fast approaching plane as it plunged through the first barrage and pointed directly at the quarter deck. The blue eyes were smiling. He rebutted, 'If you were a good Presbyterian you would know that there is no danger unless your number is up.'³²⁶

In a similar incident on 12 May 1945 *Kamikazes* again attacked the *New Mexico* and Dr Willcutts observed Spruance after two planes had just struck the ship, “The admiral made a momentary

appraisal of the two direct hits. He was calm and convincing, 'That should be all. Our flyers are up. You stay with the men. I'm going to the bridge...The ship is hard hit, even the engine rooms are exposed, but I believe that we can remain on station, complete repairs and carry on.'³²⁷ His calmness tends to indicate that this personal courage was of the permanent type as opposed to the temporary variety that tends to blur one's thinking.

Spruance demonstrated determination, or having the courage to follow the inner light wherever it may lead, in his decision to head eastward on the night of 4 June. Not everyone agreed with the decision to turn eastward. According to Adm W. Fred Boone, "...as I remember, the general reaction among ship and air group officers to the decision to steam to the east...was one of incredulity."³²⁸ Furthermore, none of Spruance's staff could recommend maneuvers to accomplish his dual goals of avoiding the night fight yet being in position to protect Midway at daylight. Therefore, Spruance himself devised the required moves. He would travel east until midnight, turn north for one hour, then head to the west.³²⁹ In short, the admiral's determination helped him achieve his objectives despite receiving only limited support from his staff.

In order to evaluate the admiral's strength of will during the operation, one must consider four factors: strength of character, firmness, energy, and staunchness.

When investigating Spruance's strength of character during the Battle of Midway, one finds mixed indications. First, he appeared to demonstrate great strength of character during the morning of 4 June when he heard the enemy contact report and decided to launch his aircraft. He remained calm, sorted the evidence, and maintained self-control. "The message burst through the loudspeaker at 0603...the effect was explosive. Browning, Buracker, and the staff watch officer lunged in a body toward the navigation chart. Spruance, meanwhile, calmly rose from his seat...Spruance stood quietly behind his staff officers..."³³⁰ He authenticated the contact report, plotted it himself, and gave the order to launch the aircraft.³³¹ This observation is further supported by the comments of Commander William H. Buracker, who was in the same room with Spruance at the time, "The admiral was cool, calm, and determined and thereafter left control of flight operations to our staff."³³²

There were, however, at least one occasion when Spruance let his emotions erupt. The instance occurred on 6 June when Spruance was irritated and puzzled as his aircraft were scoring hits on enemy surface vessels, but not sinking them. He wanted to know the type vessels his aircraft were attacking so he sent out two reconnaissance aircraft to photograph the ships. Immediately after they returned from their mission Spruance wanted an oral debrief as he was very anxious to identify the ships. The initial response he received was, "Sir, I don't know...but it was one hell of a big one." "The casual nonresponsive answer provoked Spruance's anger, and it grew when the second pilot confessed he didn't know what he had seen either; he had forgotten to take his ship recognition cards. Spruance excoriated the two careless pilots...His fury finally abated when the photographer reported he had some excellent photos."³³³ Despite this exception, Spruance demonstrated generally a strong sense of character during times of high stress.

Spruance displayed firmness as his task force entered the battle with the constant belief that he had to attain surprise to defeat the Japanese carriers. In his own words

I felt very strongly that our big strength factor would be surprise and that we must do nothing to alert the enemy to our presence in the area. This meant no radio transmissions could be intercepted...I further advised the task force that I would not open up on radio to bring in any aircraft out on search which failed to find their way back to the carrier.³³⁴

Although Spruance was the Task Force 16 commander for only eight days before the battle, he demonstrated his energy to enhance the morale of his people. His first action to maintain morale came when he put Halsey's staff at ease at their first meal together on 28 May when he said, "Gentlemen, I want you to know that I do not have the slightest concern about any of you. If you were not good, Bill Halsey would not have you."³³⁵ According to the admiral's Flag Lieutenant, Robert Oliver, "In a few words, Spruance had broken the ice, melted it and poured it down the scuppers." This exchange allowed the staff to focus on their jobs as opposed to worry about how to work with a new boss.

When Spruance turned on the carrier lights and navigational beacons, he demonstrated his concern for and impact on the morale of his pilots. According to Capt Marc A. Minster, commander of the *Hornet* during the operation, “He had witnessed the morale of the returning pilots and was keenly aware of the impact that the lighting up had on them.”³³⁶

One last incident provides insight on Spruance's concern for the morale of his men. He frequently walked the flight deck and talked to his flyers. During one of these discussions he, “...gained the overwhelming impression that they felt the future was hopeless. They would go until their number was up, but that day was inevitable....Spruance lost no time in getting Nimitz to institute a rotation system.”³³⁷

Staunchness is the will's resistance to a single blow. Spruance demonstrated this trait after he found out that his Torpedo Squadron Eight was totally decimated in its initial attack on the Japanese carriers. He continued to send crews into battle even though this event deeply bothered him. In his own words, “I felt badly about our personnel losses. The torpedo planes were obsolescent and about to be replaced by the TBF. Actually, the torpedo plane attack pulled the Japanese fighters down, left the air above clear for our dive bombers.”³³⁸ In spite of these losses, Spruance launched a second attack later that same afternoon. This single blow did not break Spruance's will.

Trait Observations Within the Physical Sphere

Spruance kept physically fit. He was never noted for being tired during combat. He walked the deck when he was at sea and swam when he was in port. Additionally, he removed his chair from his desk so he would spend the entire duty day standing. Even during combat, the admiral would eat appropriately, rest, and relax. After breakfast on the morning of 5 June, the staff excused themselves and hurried off, anticipating more fighting. Oliver, Spruance's Flag Lieutenant, rose to follow. Spruance said, “Come sit with me for a while, they don't need us up there, besides, you and I had a busy day yesterday, and it won't hurt us to relax for a while.” The admiral was cheerful, relaxed and philosophical.³³⁹ Spruance's physical exercise routine allowed him to handle the stress of command well throughout the entire war. This assertion is supported

by the observations of Dr David Willcutts, who was ordered by the Secretary of the Navy to monitor Spruance's health. When he came on board the *New Mexico* on 1 April 1945, Willcutts said, "His health was exceptionally good. He had great stamina, never seemed to tire. He required no medication, not even aspirin, during my year with him."³⁴⁰

Summary of Trait Observations

During the Midway operation, Spruance clearly demonstrated the following cognitive traits: judgment, an ability to operate outside the rules, *coup d'oeil*, objectivity, an ability to recognize the limit of his men and machines, superior intelligence, and deliberate modesty. The evidence provides a mixed review of Spruance's ability to maintain his presence of mind. In one instance he took the initiative and made something happen, in another he failed to maintain a presence of mind during a critical time of the operation. In each instance his inexperience in carrier operations was a factor. Although evidence suggests he worked in concert with other commanders after Midway, he did not work in concert with other commanders during the Battle of Midway as he failed to ensure that attack options were coordinated among carrier and land-based aircraft commanders. This criticism can be softened by considering that coordination was probably very difficult due to limited communications among the various commanders during operations. Spruance clearly demonstrated the following moral traits: moral courage, determination, firmness, energy, and staunchness. His strength of character was demonstrated in his partial and systemic decision-making process, though there was one instance where his pique got the better of him. His personal courage was not tested during the operation, however, in subsequent operations he clearly demonstrated personal courage. His constitution was sufficiently robust to stand the physical and mental stress of high level command in war.

Concluding Observations

A comparison of the traits demonstrated by Spruance with those discussed in the theory for land command genius shows significant overlap. The common cognitive traits for this chapter include the following: judgment, an ability to operate outside the rules, *coup d'oeil*, objectivity, knowledge of the capabilities of one's people and material resources, and superior intelligence.

Spruance receives a mixed review for his presence of mind during the Battle of Midway. A valid observation is that he faced a very difficult test and he did rather well considering he was not a pilot nor did he have experience as a carrier task force commander. A similar observation can be made for the lack of a demonstrated ability to work in concert with other commanders of any service. First, the coordination with the Midway airpower commander and Fletcher's task force was extremely difficult once operations were in progress. However, there was not complete coordination of attack planning before that time. The two unique cognitive characteristics demonstrated that is not in common with the theory of land command genius is the ability to use a form of air *Auftragstaktik* and a deliberate modesty.

The common moral elements with the theory for land genius warfare are moral courage, determination, firmness, energy, and staunchness. Spruance also demonstrated strength of character during combat operations and the times he lost his temper did not negatively influence his decision-making process. Spruance did not demonstrate his personal courage during the campaign, but he did display this courage during subsequent campaigns. In the case of Midway, the *Enterprise* was not attacked, and Spruance's personal courage was therefore, not tested directly.

In accordance with the theory for genius of land warfare, Spruance displayed a strong inclination to maintain his personal fitness. Spruance stood at his desk during duty hours, walked on the deck each day, and swam when he was in port. He got an adequate amount of sleep and ate nutritional meals.

Spruance recognized the fact that good fortune played in the events of 4 June after he reviewed the Japanese version of events in Midway, written by Mitsuo Fuchida and Masatake Okumiya.

In reading the account of what happened on 4 June, I am more than ever impressed with the part that good or bad fortune sometimes plays in tactical engagements. The authors give us credit where no credit is due, for being able to choose the exact time for our attack on the Japanese carriers when they were at the greatest disadvantage....All I can claim credit for, myself, is a very keen sense of the urgent

need for surprise and a strong desire to hit the enemy carriers with our full strength as early as we could reach them.³⁴¹

In particular, luck was involved in McClusky's decision to follow the Japanese destroyer to the rest of the fleet. However, the results were tied to Spruance's decision to strike at the earliest possible opportunity and to strike with the whole force. If Spruance had delayed or if he had committed piecemeal, McClusky would never have been in position to make the informed speculation that he did that led him to the Japanese carriers. Although luck did play a role in the outcome of the operation, Spruance's objective and timely decision-making process was also a major factor.

Spruance also revealed some of his views on training naval commanders. First, he believed both moral and cognitive qualities, "...may be improved by application, study, and reflection."³⁴² Also, when discussing naval officer training, "he felt that a student should be trained to reason and think for himself."³⁴³ Furthermore, he believed, "...that making war is a game that requires cold and careful calculation."³⁴⁴ "Each operation is different and has to be analyzed and studied in order to prepare the most suitable plans for it. This is what makes the planning of operations in war such an interesting job."³⁴⁵

²⁴⁷ "Letter from Walter Lord to Tom Buell," 8 May, 1973, Naval Historical Collection (US Naval War College, Newport, R.I.).

²⁴⁸ Henry H. Adams, "Admiral Raymond A. Spruance," in The War Lords: Military Commanders of the Twentieth Century, ed. Field Marshal Sir Michael Carver (Boston, Mass.: Little, Brown and Company, 1976), 450.

²⁴⁹ Robert Elmer Barde, "The Battle of Midway: A Study in Command" (PhD diss., University of Maryland, 1971), Located in Collection 37, Series 2, Box 15, Naval War College, Newport, R.I., 30.

²⁵⁰ Rear Adm Matome Ugaki, Imperial Japanese Navy, Diary, 14 January, 1942 (English translation rights owned by Dr. Gordon W. Prange; published in Japanese under the title Senso Roku, in 1956.), cited in Barde, 25.

²⁵¹ *Ibid.*, 25.

²⁵² "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis", NAVPERS 91067 (US Naval War College, Newport, R.I., 1948), 27.

²⁵³ Barde, 45.

²⁵⁴ Thomas B. Buell, The Quiet Warrior (Annapolis, Md.: Naval Institute Press, 1987), 136.

²⁵⁵ "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis", 92.

²⁵⁶ *Ibid.*, 92, 133.

²⁵⁷ *Ibid.*, 104, 109, 112, 114.

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- ²⁵⁸ Ibid., 3.
- ²⁵⁹ Agawa, Isoroku Yamamoto, 278, cited in Barde, 53. and According to Edward Drea, intelligence derived from ULTRA gave Nimitz the strategic advantage. He defines ULTRA as information obtained through monitoring, intercepting, and decoding enemy radio communications. cited in Edward Drea, MacArthur's ULTRA: Codebreaking and the War Against Japan 1942-1945 (Lawrence, Kans.: University of Kansas Press, 1992), 33.
- ²⁶⁰ Buell, The Quiet Warrior, 137.
- ²⁶¹ Ibid., 137.
- ²⁶² "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis", 85, Plate 11.
- ²⁶³ Capt Mitsuo Fuchida, IJN, Retired, and Maj Gen Masatake Okumiya, IJN, Retired, Midway: The Battle That Doomed Japan, The Japanese Navy's Story (Annapolis, Md.: Naval Institute Press, 1955), 180, 182.
- ²⁶⁴ Barde, 163.
- ²⁶⁵ "The Battle of Midway including the Aleutian Phase 3-14 June, 1942: Strategic and Tactical Analysis" 90-1.
- ²⁶⁶ Fuchida and Okumiya, 199, 201.
- ²⁶⁷ Ibid., 198.
- ²⁶⁸ Ibid., 201.
- ²⁶⁹ Mobile Force Detailed Battle Report #6, ONI Review, Adm Chuichi Nagumo, IJN, May 1947, 17, cited in "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis," 86.
- ²⁷⁰ "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis," 92.
- ²⁷¹ Theodore Roscoe, United States Submarine Operations in World War II (Annapolis, Md.: US Naval Institute, 1949), 128.
- ²⁷² "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis", 91.
- ²⁷³ Roscoe, 129.
- ²⁷⁴ Ibid., 129.
- ²⁷⁵ Barde, 237.
- ²⁷⁶ Buell, The Quiet Warrior, 144-5.
- ²⁷⁷ Ibid., 146.
- ²⁷⁸ Barde, 123.
- ²⁷⁹ Buell, The Quiet Warrior, 147.
- ²⁸⁰ "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis," 92.
- ²⁸¹ Ibid., 92.
- ²⁸² Barde, 237.
- ²⁸³ Buell, The Quiet Warrior, 148.
- ²⁸⁴ "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis," 92-5.
- ²⁸⁵ Ibid., 98-100.
- ²⁸⁶ Buell, The Quiet Warrior, 154.
- ²⁸⁷ "The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis," 143.
- ²⁸⁸ Buell, The Quiet Warrior, 156.
- ²⁸⁹ Ibid., 157-9.
- ²⁹⁰ Ibid., 160-3.

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- ²⁹¹ “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis”, 92.
- ²⁹² Barde, 6.
- ²⁹³ “Letter from Walter Lord letter to Tom Buell,” 8 May, 1973, Naval Historical Collection (US Naval War College, Newport, R.I.).
- ²⁹⁴ “Letter from Adm Raymond A. Spruance to Adm E.P. Forrestel, USN (RET),” 14 December, 1962, Naval Historical Collection (US Naval War College, Newport, R.I.).
- ²⁹⁵ Buell, The Quiet Warrior, 144.
- ²⁹⁶ “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis,” 122.
- ²⁹⁷ Buell, The Quiet Warrior, 145.
- ²⁹⁸ “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis,” 123.
- ²⁹⁹ Buell, The Quiet Warrior, 147.
- ³⁰⁰ Barde, 361.
- ³⁰¹ Buell, 158.
- ³⁰² Ibid., 147.
- ³⁰³ Ibid., 152.
- ³⁰⁴ Ibid., 143.
- ³⁰⁵ Ibid., 150.
- ³⁰⁶ Ibid., 152.
- ³⁰⁷ “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis,” 98.
- ³⁰⁸ “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis,” 135.
- ³⁰⁹ “Letter from Admiral Raymond A. Spruance to Vice Adm E.P. Forrestel USN (RET),” 14 December, 1962, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³¹⁰ “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis”, 143.
- ³¹¹ In the words of Spruance, he attributed his successful war operations to the training he received at the Naval War College. Vice Adm Emmett P. Forrestel, Admiral Raymond A. Spruance: A Study in Command (Washington D.C.: Government Printing Office, 1966) 11.
- ³¹² “The Battle of Midway including the Aleutian Phase June 3 to June 14, 1942: Strategic and Tactical Analysis”, 143.
- ³¹³ Ibid., 102.
- ³¹⁴ Buell, The Quiet Warrior, 157.
- ³¹⁵ “Letter from Rear Adm Clarence Wade McClusky, Jr., USN (RET), to Commander Tom Buell 12 November, 1971,” Naval Historical Collection, Collection # 37, (US Naval War College, Newport, R.I.).
- ³¹⁶ Barde, 378.
- ³¹⁷ Buell, The Quiet Warrior, 163.
- ³¹⁸ Barde, 381.
- ³¹⁹ Buell, The Quiet Warrior, xxx.
- ³²⁰ Interview with Adm Chester W. Nimitz, USN conducted at Quarters no. 1, Treasure Island, Calif., on 14 October 1965, by Dr Robert Elmer Barde, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³²¹ Lt Commander Thomas B. Buell, “Admiral Raymond A. Spruance and the Naval War College Part II: From Student to Warrior,” *Naval War College Review*, April, 1971, 38.

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- ³²² Vice Adm Emmett P. Forrestel, Admiral Raymond A. Spruance, USN: A Study in Command (Washington: Government Printing Office, 1966), 62.
- ³²³ Interview with Adm Raymond A. Spruance, by the San Diego Union Newspaper, 3 June, 1968, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³²⁴ Interview of Adm Raymond A. Spruance, by Commander Tom Buell, 1963, at Pebble Beach, Calif., Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³²⁵ Barde, 361.
- ³²⁶ Dr David Willcutts, Reminiscences of, 5th Fleet Medical Officer, 1945-6, Item # 297 Naval Historical Collection, (US Naval War College, Newport, R.I.), 1
- ³²⁷ Ibid., 1.
- ³²⁸ "Letter from Adm W. Fred Boone, USN (RET) to Commander Tom Buell," 20 November, 1971, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³²⁹ Buell, The Quiet Warrior, 155.
- ³³⁰ Ibid., 145.
- ³³¹ Ibid., 145.
- ³³² "Letter from Commander William H. Buracker to E.P. Forrestel," 4 December, 1962, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³³³ Buell, The Quiet Warrior, 162.
- ³³⁴ "Letter from Adm Raymond A. Spruance to Vice Adm Emmett P. Forrestel USN (RET)," 14 December, 1962, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³³⁵ Buell, The Quiet Warrior, 140.
- ³³⁶ Barde, 361.
- ³³⁷ "Letter from Walter Lord to Tom Buell," 8 May, 1973, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³³⁸ "Letter from Adm Raymond A. Spruance, to Vice Adm Emmett P. Forrestel USN (RET)," 14 December, 62, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³³⁹ Buell, The Quiet Warrior, 155.
- ³⁴⁰ Willcutts, 2.
- ³⁴¹ Fuchida and Okumiya, 8.
- ³⁴² Adm Raymond A. Spruance, "Command," Naval Historical Collection, Thesis completed at the Naval War College, 1927, Collection 12, Series 3, (US Naval War College, Newport, R.I.), 4.
- ³⁴³ "Letter from Adm Raymond A. Spruance to E.B. Potter, Professor of History, US. Naval Academy," 3 January, 1959, Naval Historical Collection, (US Naval War College, Newport, R.I.).
- ³⁴⁴ Ibid.
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Chapter 5 Kenney and the Fighting Fifth in the Papuan Campaign

This chapter analyzes Maj Gen George C. Kenney during the Papuan Campaign in the Southwest Pacific Theater. He, too, achieved significant results with limited resources. Despite the fact that he operated in a secondary theater with constrained resources, Kenney played a key role in stopping the Japanese advance in the Southwest Pacific Theater. Whether or not he demonstrated traits of genius for air command at the operational level requires further analysis. At this point, however, it is possible to conclude that the results achieved were not the product of superior resources.

Kenney faced a different set of challenges than did Dowding in the Battle of Britain and Spruance at Midway. First, where Dowding and Spruance employed airpower directly during the Battle of Britain and Midway, Kenney employed airpower interdependently with surface forces. Second, where Dowding and Spruance faced only one enemy--the Germans and Japanese respectively, Kenney had to battle both the Japanese and the oppressive Papuan environment. These differences caused Kenney to face greater challenges in three areas. First, he would face a daily challenge for the morale of his airmen because of the harsh environment. Second, the higher priority accorded to the European theater limited his replacements of men and equipment and demanded improvisation. Finally, having an ability to work in concert with commanders of other services was imperative in Kenney's case.

Operational Summary of the Papuan Campaign

This campaign took place in the Southwest Pacific Theater from 21 July 1942 until 23 January 1943, during which the Japanese Army reached its culminating point. According to Lt Gen Robert L. Eichelberger, commanding general who captured Buna, the campaign was, "...the first Allied ground force victory in the Pacific."³⁴⁶ The contributions made by American airpower during this campaign were critical to success. Again, in Eichelberger's words, "Both Australian and American ground forces would have perished without George Kenney's air."³⁴⁷ The man who led those efforts, Maj Gen George C. Kenney, faced

challenges in all three spheres of genius for operational level air commanders. He had to overcome extremely long logistics lines, low morale, challenging weather conditions, devastating tropical diseases, and numerical inferiority exacerbated by a relatively low strategic priority. In short, Kenney faced daunting challenges and achieved remarkable results with limited resources.

Campaign Situation

After the successful conquests of Pearl Harbor, the Philippines, Malaya, Wake Island, Guam, and Rabaul, the Japanese continued to expand their sphere of influence. Following the Doolittle raid of 18 April 1942, the Japanese approved a new operations plan which, in the Southwest Pacific Theater included an advance into the Solomons and Port Moresby to be followed by further advances into New Caledonia, Samoa, and the Fiji Islands. The primary purpose of this two-pronged approach was to interdict the lines of communication between the US and Australia.³⁴⁸ Special emphasis was placed on blocking ships carrying aircraft and fuel to Australia via the South Pacific. The Japanese believed that such a blockade would retard, if not prevent, Australia's development into an Allied offensive base.³⁴⁹ The first defeat of the Japanese in this theater occurred during May when they failed to capture Port Moresby as a result of Adm Shigeyoshi Inouye's heavy losses in the Battle of the Coral Sea.³⁵⁰ This setback and the loss at Midway forced the Japanese to postpone the New Caledonia-Fiji-Samoa operation for two months.³⁵¹ Despite these setbacks, Imperial General Headquarters did not rescind its order of 9 May 1942 for the 17th Army to carry out the invasion of Port Moresby during the first part of July.³⁵²

Japanese land, air, and sea forces were available to conduct this operation. According to an Army Air Forces intelligence summary, most of the Japanese forces were located at Rabaul, New Britain, which was the headquarters of the Japanese Eighth Area Army, commanded by Lt Gen Imamura. Subordinate to Eighth Army were the 17th and 18th Armies. The combined strength was estimated between 79,000-94,000 which could be

reinforced by 60,000 in three weeks. These armies worked closely with aerial and naval forces in joint operations.³⁵³

Similarly, Rabaul was a key location for air and sea forces. The air forces had 318 combat aircraft immediately available with 273 more that could be flown in within 24-48 hours.³⁵⁴ The Japanese had seized the Lae and Salamaua airfields on the northern coast of New Guinea on 8 March 1942 and commenced construction of air facilities in preparation for further advances.³⁵⁵ Japanese bombers could easily reach Port Moresby; and Japanese fighters escorted ships sent on resupply missions to New Guinea. Although the primary location for Japanese naval forces was Truk, Rabaul was a key place of departure for resupplying troops and supplies in the Papuan Campaign. The total naval forces available to the Japanese for this theater were four battleships, two aircraft carriers, 12 cruisers, 40 destroyers, and 27 submarines.³⁵⁶ The Japanese forces were formidable when compared to the Allies.

General MacArthur's resources were clearly inferior. He had battle tested but weary soldiers from the Australian 7th Division and unproven troops in the US 32nd Division, consisting of members of the Wisconsin and Michigan National Guard who were not trained in jungle warfare.³⁵⁷ According to Eichelberger, "...the American troops were not in no sense ready for jungle warfare. I told Generals MacArthur and Sutherland that I thought the 32nd Division was not sufficiently trained to meet Japanese veterans on equal terms."³⁵⁸ MacArthur had a very limited naval force under the command of Vice Adm Arthur F. Carpender.³⁵⁹ This force was comprised of the Australian heavy cruisers *Australia* and *Canberra*; the Australian light cruiser *Hobart*; and the heavy cruiser USS *Chicago*, supplemented by a few destroyers, submarines, escort, and auxiliary craft.³⁶⁰ His Air Force, run by Kenney beginning 3 August 1942, was assigned 517 combat aircraft of which, according to Kenney, only 220 were combat ready.³⁶¹ One hundred seventy of the 245 fighters were awaiting salvage or being overhauled.³⁶² Kenney's ability to support operations

in Papua was further limited by the fact that most of his planes were based in Australia, with only a few fighter aircraft of the 49th Fighter Group at Port Moresby.³⁶³

From a strategic perspective, the entire Pacific Theater was secondary to the European and North African Theaters. As of April 1942, the Joint Chiefs of Staff agreed to concentrate resources in the British Isles for an early invasion of northwest Europe. Although their plans would later change, in response to this decision, army planners sought to limit resources to the Pacific to those absolutely necessary to conduct a successful defense.³⁶⁴ According to the US Army Personnel and Cargo Movement official history, during the period 1 July 1942 to 31 January 1943, 361,770 troops were sent to Europe and North Africa, whereas 186, 523 troops were sent to the five theaters in the Pacific. Of these, the Southwest Pacific Theater received only 32, 489 troops. This number was approximately five percent of the total troops deployed worldwide during the same period. In terms of cargo movement, the European and North African Theaters received 3,443,140 tons of cargo, whereas the five theaters within the Pacific received 3,515, 771 tons of cargo over the same period. However, the Southwest Pacific Theater received only 519, 239 tons, which was approximately six percent of the total cargo shipped worldwide, during this period.³⁶⁵ Air reinforcements were similarly limited. Through April 1942, General Marshall made some concessions for army troop strength, but “The War Department refused to commit additional air groups, consenting only to bring those already in the Pacific to full strength.”³⁶⁶ During September, Marshall allotted an additional bomber group to Hawaii that was eventually divided between the South and Southwest Pacific Theaters.³⁶⁷ However, “Marshall and Arnold were determined, moreover, not to throw in all their uncommitted air power; the fifteen groups earmarked for the Pacific late in July were held back in strategic reserve.”³⁶⁸ Gen Douglas MacArthur, as the Commander in Chief of the Southwest Pacific Area (CINCSWPA), was given orders from the JCS to “...hold the key military regions of Australia as bases for a future offensive and to check the Japanese southward advance by destroying enemy shipping, aircraft, and bases in the Netherlands East

Indies, New Guinea, and the Solomon Islands. ...and support the operations of Allied forces in the South Pacific and Indian Theaters.”³⁶⁹

MacArthur's material deficiencies were somewhat mitigated by an excellent intelligence infrastructure.³⁷⁰ First, he was supported by US Navy traffic analysts and ULTRA intercepts. In early July, a report from these operators, based on a deciphered a Japanese Navy message, disclosed that the Japanese were likely to land at Buna on 21 July and then push south over the Owen Stanley mountain range to Port Moresby.³⁷¹ One of his most important intelligence agencies was the Allied Translator and Interpreter Section (ATIS) which was organized on 19 September 1942. This organization neutralized the Japanese advantage of simply relying on their language to encrypt information. Captured and subsequently translated documents revealed the enemy's problems with food and supplies, his order of battle, the effects of air attacks, the state of morale, as well as actual attack plans. This agency was complemented by the Allied Intelligence Bureau (AIB) which was established to collect intelligence through clandestine operations behind enemy lines. This organization absorbed the Royal Australian Navy's coast watching system.³⁷² Although MacArthur had access to a good deal of relevant intelligence, he tended to use ULTRA depending on the situation and his own strategic assessment at a given moment. “When ULTRA fit into the general's plans, it was employed. When it did not, it was relegated to a minor role.”³⁷³

A final strategic consideration was MacArthur's concern with holding the area around Milne Bay, located on the southeast corner of Papua. Here MacArthur intended to develop airfields that would help guard the approaches from the Solomon Chain to the Coral Sea and to assist in the capture of the northeast coast of Papua and New Guinea.³⁷⁴ Accordingly, he dispatched 1,300 US combat and service troops to the area on 12 June 1942 with instructions to construct a fighter strip and bomber field. After learning of an upcoming Japanese attack on the area,³⁷⁵ he secretly sent 4,500 men of the Australian 18th Brigade in mid-July to reinforce the area.³⁷⁶

Papua was very difficult to support logistically. There were two problems to solve, getting to the theater, and inter theater transport. Maj Gen Rush B. Lincoln who was in charge of such matters, faced tough challenges. His depots were over 7,500 miles from the US and the Australian industrial facilities were also overburdened. Local Australian transportation was inadequate and especially poor in remote areas, where most of the operational units were located. He also faced a persistent shortage of spare parts, trained mechanics, and service units. These factors, in combination with limited all-weather landing fields, hazardous weather, great distances, and relentless combat, made it difficult to keep more than 50 percent of available aircraft ready for combat.³⁷⁷ All support for Papua came from Australia, and was subject to interdiction by the Japanese Navy that was roaming the entire Western Pacific at will. Additionally, the Southwest Pacific Theater had a very limited number of vessels for shipping duty. Ships avoided water near the coastlines due to dangerous uncharted coral reefs and the potential of Japanese land-based air attacks.³⁷⁸

These obstacles were minor compared to the terrain awaiting ground troops and airmen. "Few areas in the world presented such a formidable variety of terrain obstacles to military operations."³⁷⁹ Obstacles included 13,000 foot mountain ranges, steep peaks, deep gorges, dense jungles, mangrove swamps, swollen streams, ever present mud and slime, and seven foot tall kunai grass with sharp-edged blades. The Owen Stanley Mountain Range added to aircraft fuel consumption and effectively limited the range of bombing and escort missions. Furthermore, there were no railroads, roads beyond the immediate outposts, or even well established paths for inland travel. After a storm the narrow trails that did exist became muddy ruts through the forest. Thus, army and air force personnel in the interior of Papua were peculiarly dependent upon airborne transport for timely supply needs.³⁸⁰ Unfortunately, in the summer of 1942, the Japanese controlled four of the five all-weather airfields in the immediate Papua area at Buna, Lae, Salamaua, and Wau. The Allies had only the mountain airstrip at Kokoda for all-weather operations until Port Moresby was improved during the

fall.³⁸¹ These factors put an increased burden of responsibility on the air forces in the SWPA for transport and resupply particularly as the weather deteriorated.

Weather added to the trying conditions in Papua. Being within 300 miles of the equator, heat and humidity were severe. Annual rainfall for the area exceeded 150 inches per year, and this precipitation usually came in bursts during the rainy seasons. Low ceilings and turbulence complicated operations throughout the campaign. These weather conditions were a factor in reconnaissance and targeting of Japanese shipping in particular.

The weather and terrain bred deplorable health conditions that put an added burden on airlift needs. Most non-natives could last little more than six months in this hostile environment. Malaria was rampant. Bacillary and amoebic dysentery further drained the combat strength. Difficult to cure tropical ulcers formed from the slightest scratch. As the following report indicates, even the Japanese suffered: "Epidemics are numerous and the climate is bad...It is preferable to replace personnel at least every five or six months."³⁸² During November, Kenney noted that "The troops [US 32nd Division] were shot full of dysentery and the malaria was starting to show up. We were flying back a lot of sick every day as well as a few wounded."³⁸³ Additionally, "During December and early January the aircraft took out an average of more than 100 patients daily, achieving a peak of 280 on 8 December....when the fight was over, the record showed that...the air force had flown out 2,350 sick and 991 battle casualties."³⁸⁴ Since airlift was the primary method of moving troops, these conditions put an additional strain on those limited assets.

The morale of the airmen was also at a very low point as Kenney took over the command. Most American units were deployed in remote areas on the Australian mainland. Here the men endured primitive living conditions, a lack of opportunity for recreation, "different" Australian rations, and lack of adequate provision for hospitalization. Some of these airmen were recently rescued survivors from Java and the Philippines who were very tired and in low spirits. Morale was also dampened by the inadequate training of the limited, newly-arrived pilots, and a stagnant promotion list.³⁸⁵ The conditions and morale of units located at Port

Moresby were similar to those on the Australian mainland. According to Gen Richard H. Ellis, a pilot of the 13th Bomb Squadron, 3rd Bomber Group, flying out of Port Moresby as a Lieutenant during the Papuan Campaign, "Our living conditions in Port Moresby were miserable most of the time. You lived right beside your airplane....the food was terrible...most of it was Australian mutton..."³⁸⁶ In general, poor morale was a major concern for Kenney in the Southwest Pacific.

Having been frustrated at Coral Sea in their attempt to seize Port Moresby by sea, the Japanese decided to take it by land. They then launched a land assault on the north side of Papua and freely moved by the Kokoda Trail over the Owen Stanley Mountains. This force of 3,600 army and navy personnel from Rabaul, New Britain landed near Buna, Papua on 21 July 1942, under the command of Col Yokoyama Yosuke.³⁸⁷ The Papua Campaign was underway with the Allies on the defensive.

The Campaign Plan

There were two parts to the campaign: an initial defense, followed by an offensive to drive the Japanese out of Papua. The Allied army and air forces were the key players in this campaign with the naval forces playing a secondary role of transporting supplies and troops from Australia to established ports, such as Port Moresby.

From Kenney's perspective, the initial defense called for numerous simultaneous actions. If one mission had an edge in priority, it was the attainment of air superiority over New Guinea. Offensive counterair missions were flown against Lae, Salamaua, Buna, and Vunakanau airfields. Kenney also supported the defense of Papua by airlifting troops of the 32nd Division from Australia to Port Moresby. Additionally, his forces flew CAS and interdiction missions along the Kokoda Trail and interdicted Japanese shipping that was resupplying the enemy forces. Kenney's forces also supported the Allied drive in the Solomons, which was under the command of Vice Adm Robert Ghormley, Commander of the South Pacific. The primary taskings in this area were flown in support of the Guadalcanal

and Bougainville efforts.³⁸⁸ The geographic breadth and complexity of these diverse operations combined to challenge Kenney's mastery of the air component of operational art.

After Kenney's air forces helped stop the Japanese thrust toward Port Moresby, his focus shifted to support for General MacArthur's three-pronged counteroffensive to capture Buna on the northern coast of Papua and drive the Japanese out of Papua. The general plan included having the Australian 7th Division fight northward over the Kokoda Trail, while a regiment of the US 32nd Division traversed the Kapa Kapa Trail, which was south and parallel to the Kokoda Trail, and having transport aircraft deliver the US 128th Regiment to Wanigela Mission and then have those troops converge simultaneously with the other soldiers on Buna. Fifth Air Force would continue its taskings assigned during the defensive phase and airdrop supplies throughout the Papua theater as required to support army units.³⁸⁹

Campaign Execution

Initially, the Japanese drove the campaign actions. Their attack plan was formulated following the Battle of Midway when the Imperial General Headquarters canceled plans for operations against Samoa, New Caledonia, and the Fiji Islands. General Hyakutake, commander of the 17th Army, was directed to concentrate his efforts on securing Eastern New Guinea including a land offensive against Port Moresby.³⁹⁰ The Japanese landing at Buna on 21 July preempted MacArthur's orders to seize Lae, Salamaua, the northeast coast of New Guinea, and Rabaul;³⁹¹ it put the Allied forces of the Southwest Theater squarely on the defensive.

During the period of Allied defense, the Japanese fought aggressively along the Kokoda Trail toward Port Moresby. The Australians only had two brigades scattered before Port Moresby along the Kokoda Trail and the Japanese advanced rapidly.³⁹² The Japanese made rapid advances toward Port Moresby. In response to this movement, on 1 August, Australian Gen Thomas A. Blamey, commander of Allied land forces under MacArthur, sent one brigade of the 7th Australian Division to reinforce the Kokoda Trail defenses and another brigade of the 7th to Milne Bay. The Port Moresby/Kokoda Trail defenses then had a total

strength of three brigades; and the Milne Bay garrison had a strength of two brigades.³⁹³ On 4 August, Kenney replaced Lt Gen George H. Brett as the Allied Air Force Commander of the Southwest Pacific Area.

Kenney's first major action was to support Ghormley in the South Pacific as the latter planned to attack Tulagai and Guadalcanal on 7 August. Eighteen B-17s of the 19th Bombardment Group successfully bombed Vunakanau Airfield at Rabaul resulting in no Japanese air interference at either Guadalcanal or Tulagi.³⁹⁴ The Allied Air Forces had caught the Japanese by surprise. They had planned to send an air contingent from Rabaul to Guadalcanal on the same day of the attack, as their airstrip was completed on 5 August.³⁹⁵

Throughout the remainder of August, the Allied Air Forces bombed Japanese airfields in Papua, New Guinea, and at Rabaul to achieve air superiority. These forces also attacked the Japanese troops along the Kokoda trail and interdicted resupply convoys for Buna and Milne Bay.³⁹⁶

On 24-26 August the Japanese took advantage of poor flying weather and landed 2,200 troops in the Milne Bay area.³⁹⁷ This area is located about 180 miles southeast of Buna where the initial Japanese force landed. Seventeenth Army staff officers thought that since the Allied base was newly operational, it did not yet have a substantial defensive garrison.³⁹⁸ They underestimated the actual Allied strength that included a force of 8600 of which 4,100 were veteran Australian troops recently deployed from the Middle East.³⁹⁹ The Allied Air Forces were unable to prevent a landing due to the poor visibility caused by storms in the immediate area.⁴⁰⁰ However, their subsequent bombing attacks did prevent the establishment of usable supply depots on shore and they also provided close air support for the Australian Forces.⁴⁰¹ "In direct support cooperation with the infantry, the RAAF P-40s continued to fly from the Milne Bay field and prove effective."⁴⁰² According to an ULTRA intercept of a message from the Eighth Fleet to the landing party on 4 September 1942, the Japanese were ordered to evacuate Milne Bay.⁴⁰³ Organized resistance at Milne Bay ceased by 5 September and the Japanese managed to evacuate 1,300 troops that evening.⁴⁰⁴

Simultaneously with the Milne Bay attack, the Japanese intensified their offensive on the Kokoda Trail and pushed the Australian reinforcements back at Isurava. MacArthur was thus faced with stopping a renewed Japanese initiative toward Port Moresby.⁴⁰⁵ By 8 September Blamey had ordered two more brigades of the 7th Division to Port Moresby.⁴⁰⁶ The Japanese were now five miles west of the Kokoda Gap. On the night of 8 September Kenney proposed to MacArthur the airlift of troops into Wanigela Mission as a base for movements against the enemy at Buna, but MacArthur demurred pending the outcome of the Kokoda Trail defense. Kenney flew to Port Moresby on 9 September to survey the situation. After conversing with Lt Gen Sydney F. Rowell, Commander of the New Guinea Land Forces and observing the rapid building of a defensive perimeter that did not include most of Port Moresby's airfields, he decided to "recommend to General MacArthur that he let me fly some Yanks up there."⁴⁰⁷ On the night of 12 September, Kenney reported to MacArthur and suggested that a regiment be flown immediately to Port Moresby. This was a timely recommendation as the official US Army History recorded, "The reason for the swift and dramatic movement to New Guinea by air...soon became obvious. It lay in the continued advance along the Kokoda Trail of General Horii's troops. Not only did Horii still have the initiative, but he seemed to be threatening Port Moresby as it had never been threatened before."⁴⁰⁸ MacArthur agreed and the next day ordered the deployment of the 126th Infantry regiment on 15 September.⁴⁰⁹ By the end of the day, Douglas and Lockheed transports had delivered 230 troops of Company E, 126th Regiment, to Seven-Mile Airfield. On the same day, the remainder of the 126th Infantry started loading on ships for their trip to Moresby which was completed on 28 September. Kenney transported the 128th Infantry to the port during the period 18-24 September.⁴¹⁰ Also, that same day tired troops on the Kokoda Trail facing the Japanese had been reinforced by three fresh Australian battalions.⁴¹¹ Unfortunately, on 15 September, "...came the news that a newly arrived Australian brigade on the Kokoda Trail had withdrawn to within 25 air miles from Port Moresby."⁴¹² Although the Japanese attempted to capture Imita Ridge on

22-23 September, they were ultimately held.⁴¹³ The defensive phase of the Papuan Campaign was at an end.

During this tumultuous phase of the campaign, on 12 September, nine A-20s of the 89th Attack Squadron attacked Buna airfield with parachute fragmentation (parafrag) bombs and destroyed 17 aircraft. This was the first use of an innovative weapon that Kenney had helped design at McCook Field. He also managed to have 3,000 war reserve parafrag bombs sent to the theater when he left 4th Air Force in San Francisco on 21 July 1942 to assume his duties in the Southwest Pacific.⁴¹⁴

The offensive phase of the campaign began on 26 September when the 7th Division under the command of Maj Gen A. S. Allen, launched a counteroffensive against the Japanese on the Kokoda Trail. By 28 September, the Australians had captured Ioribaiwa Ridge.⁴¹⁵ They would spend the next month fighting to capture Kokoda Gap.⁴¹⁶

On 28 September, Ghormley, as commander of the South Pacific Theater, and other naval leaders, wanted to change the priorities of Fifth Air Force. This suggestion was presented to Kenney when he attended a conference held on the *Argonne*, Ghormley's flagship in Noumea Harbor. At this meeting, the naval leaders, including Adm Chester Nimitz, Vice Adm Richmond Turner, Rear Adm Daniel Callaghan, as well as Ghormley, wanted to make mass raids on Rabaul airfields and shipping the primary mission of Fifth Air Force. Although Kenney recognized these as important objectives, he also realized that maintaining air superiority over New Guinea and Papua, interdicting naval resupply convoys to Papua, and helping the ground troops with CAS and interdiction along the Kokoda Trail were critical to the success of ground actions in the Southwest Pacific Theater. He assured Ghormley that Fifth Air Force would do all that it could to support the South Pacific Theater.⁴¹⁷ The significance of this encounter is that Kenney did not compromise priorities that he thought were important to accomplish objectives in the Southwest Pacific Theater, including an airlift mission to Wanigela Mission.

During late September, Maj Gen Edwin F. Harding, commander of the US 32nd Division, and General Blamey met with Whitehead and Walker to discuss the feasibility of flying a large a force as could be supplied to some advanced field near Buna. This new proposal included an airlift of 10,900 troops and 3,900 native carriers and was coded as operation HATRACK. All of the US 32nd Division would be airlifted except for a single battalion of the 126th Infantry that would march over the Kapa Kapa Trail. MacArthur approved HATRACK on 2 October.⁴¹⁸ The Wanigela airlift began on 4 October when 12 transport aircraft flew a battalion of Australians from Milne Bay to Wanigela Mission in two days.⁴¹⁹ The airlift continued on 14 October when 13 C-47s flew 670 troops of the Australian 6th Independent Company and the 128th Regiment of the US 32nd Division from Moresby to Wanigela. Due to heavy rains, the move was not completed until 8 November.⁴²⁰

Kenney introduced skip-bombing to the Japanese on 23 October when six B-17s of the 63rd Squadron of the 43rd Bomber Group attacked Japanese surface vessels in Rabaul harbor.⁴²¹ The introduction of skip-bombing allowed aircraft to attack ships at lower altitudes which was very important during poor weather conditions and in any event the accuracy was much better than in level bombing at medium or high altitudes.

On 18 October Kenney received a letter from Arnold directing the four squadrons of the 90th Bomber Group (B-24s) to replace the four squadrons of the 19th Bomber Group (B-17s).⁴²² In a telephone conversation between Kenney and Walker on 19 October, Kenney stated that “he didn't want the B-24s used in the daytime until the crews were better trained and he was surer of their gunnery.”⁴²³ The first squadron of B-17s arrived on 23 October and Kenney directed Walker to send out 12 B-17s of the 93rd Squadron, 19th Bomber Group, at midnight.⁴²⁴ Kenney was also aware of an additional complication in that all of the arriving B-24s had nose wheel gear cracks. He clearly knew this because he sent a wire to Arnold requesting 50 anti-shimmy collars and told BGen Carl Connell, assistant director of the rear echelon at Brisbane, to try and acquire local collars on 23 October.⁴²⁵ Kenney took a risk when he ordered the 12 B-17s to depart, knowing that the new B-24s had cracked nose wheel

gears and that the crews were not prepared for combat by his own estimation. He did not receive his collars until November and the B-24s were grounded without them. Hence, the B-24s did not fly a combat mission until 16 and 17 November when eight and 10 B-24s were unsuccessful in their missions at the Buin-Faisi anchorage on the south end of Bougainville Island and Rabaul. The only positive accomplishment was a single Japanese vessel was set on fire. Following these missions, Kenney ordered the 90th Group out of combat and back to training status.⁴²⁶ Kenney did not put the 90th Group into combat until 14 December 1942.⁴²⁷

By 14 November, the three components of MacArthur's counteroffensive forces were ready for the assault on Buna. The Australian 7th Division had fought across the Kokoda Trail, elements of the 126th Regiment had crossed the Kapa Kapa Trail, and the remaining elements of the US 32nd Division had been airlifted to Wanigela, Pongani, and Sapia airstrips, and deployed into positions along the coast and south of Buna. Both divisions received orders to advance toward the sea on 14 November.⁴²⁸

Supply became a critical issue over the next few days. On 19 November all flying was stopped due to heavy rains and low-hanging clouds. When the 25th Brigade of the 7th Division attacked Japanese positions at Gona on 19 November, they had to withdraw because of a shortage of ammunition.⁴²⁹ During this precarious time, MacArthur's staff recommended a withdrawal from the area. However, Major Hampton and Kenney devised a method to supply troops, despite the weather, by airdropping supplies using a radio compass for direction, flying directly over the radio, and dropping supplies at the precise moment when the compass needle swung 180 degrees.⁴³⁰ MacArthur chose not to abandon the attack and Fifth Air Force resupplied the Allied forces with supply deliveries to Dobodura Airfield. Even with supplies, the US 32nd Division faced a determined enemy, was suffering from fatigue and illness, and consequently the attack stalemated.

The forces of Kenney's Fifth Air Force continued to attack Japanese convoys that were attempting to resupply the forces on the northeast coast of Papua. During one incident five

B-17s of the 63rd squadron flew two missions in search of a convoy without success. Kenney convinced the pilots to fly a third mission without rest in which two Japanese destroyers were sunk or damaged, and the remaining destroyers turned back without accomplishing their mission.⁴³¹ Similar efforts continued throughout November and December. During this time period, the enemy attempted at least six reinforcements and Kenney gave top priority to stopping the convoys.⁴³²

On 30 November, MacArthur sent Lt Gen Robert L. Eichelberger to the forward area to replace Maj Gen Edwin F. Harding, Commander of the 32nd US Division.⁴³³ Over the next two months Eichelberger would lead the 32nd Division in coordination with the 7th Division to capture Buna and Gona, and complete the campaign by capturing Sanananda Point on 22 January 1943.⁴³⁴

Campaign Results

The result of this campaign was the first Allied land victory against the Japanese. As far as the air campaign was concerned, Kenney's Fifth Air Force had performed well. From MacArthur's perspective

The outstanding military lesson of this campaign was the continuous calculated application of air power, inherent in the potentialities of every component of the Air Forces, employed in the most intimate tactical and logistical union with ground troops. The effect of this modern instrumentality was sharply accentuated by the geographical limitations of this theater. For months on end, air transport with constant fighter coverage moved complete infantry regiments and artillery batteries across the almost impenetrable mountains and jungles of Papua...⁴³⁵

In addition to the support for operations within the South Pacific theater, the major accomplishments of the campaign were as follows:

1. Air superiority was attained over North Australia and Papua.
2. Fifth Air Force helped turn back the attack on Port Moresby with CAS and interdiction missions.

3. Fifth Air Force and commercial Australian transport aircraft reinforced Port Moresby to counter the July-August Japanese offensive.

4. Transport aircraft delivered troops to Wanigela mission to help capture Buna.

5. Transport aircraft also resupplied the 7th Australian Division and the 32nd US Division on their offensive counterattacks through Papua to Buna.

6. Fifth Air Force also interdicted enemy shipping that attempted to resupply Japanese forces on the northern coast of Papua.

By the end of the campaign, 1,888 Japanese aircraft were destroyed and approximately 300,000 tons of shipping were sunk or damaged by US fighters and bombers.⁴³⁶ A passage from Clausewitz aptly describes the results of Kenney's efforts in this campaign, "...a general can best demonstrate his genius by managing a campaign exactly to suit his objectives and his resources, doing neither too much nor too little. But the effects of genius show not so much in novel forms of action as in the ultimate success of the whole."⁴³⁷

Not only did Fifth Air Force accomplish significant objectives, but perhaps more importantly, Kenney provided the catalyst and the vision for General MacArthur's follow-on operational technique. Based upon the confidence gained from Kenney's Air Forces' performance, MacArthur adapted his island-hopping technique, "A new form of campaign was tested which points the way to the ultimate defeat of the enemy in the Pacific."⁴³⁸ Kenney's Fifth Air Force would first gain air superiority; support and resupply the ground troops; strike Japanese troop concentrations and shipping; allowing the line of advance to move forward along the northern New Guinea coast and eventually to other operationally significant islands."⁴³⁹

Trait Observations of General Kenney During the Campaign

Kenney was unquestionably challenged in the Southwest Pacific Theater. MacArthur testified to this in his reply to a report from Kenney's former boss, Lt Gen John L. DeWitt, "...He will have every opportunity here for the complete application of the highest qualities of

generalship.⁴⁴⁰ With limited resources, Kenney faced challenges in all three spheres of genius--cognitive, moral, and physical.

Trait Observations Within the Cognitive Sphere

Kenney was a person with superior intelligence. "Kenney's three years at MIT helped to stimulate ideas that encompassed everything from aeronautical experimentation to correcting the translation from French to English the strategic bombardment theories of Giulio Douhet."⁴⁴¹ He also succeeded in numerous disciplines within the Army Air Forces including maintenance, supply, production, tactics, operations, and strategy.⁴⁴² Additionally, he graduated first in his class at the Air Service Engineering School in 1921.⁴⁴³

Kenney demonstrated his ability to work in concert with other commanders of the land or sea mediums. First, he knew what he was doing when it came to running an air force. Second, because he knew what he was doing, he had confidence in himself and his feeling of confidence was based on a cognitive perception in his own mind. Given these two prerequisites, Kenney stood up for what airpower could contribute to a joint campaign. Kenney demonstrated an ability to work well with a land commander when he spoke to MacArthur for the first time in Australia, "I told him as long as he had enough confidence in me to ask for me to be sent here to run his air show for him, I intended to do that very thing. I knew how to run an air force as well or better than anyone else...from now on they [the air forces] would produce results."⁴⁴⁴ Additionally, Kenney was not intimidated by MacArthur's staff including Maj Gen Richard K. Sutherland, MacArthur's Chief of Staff. When given an overly prescriptive operational order from Sutherland's staff, Kenney immediately challenged Sutherland on the matter. He insisted that the orders be rescinded and that in the future he expected headquarters to simply give the air force a mission, and leave the technical and tactical details to be determined by Kenney's subordinate commanders.⁴⁴⁵ Kenney was successful and he changed Sutherland's way of doing business with the air force. This sequence of events shows that the ability to work in concert with other commanders does not necessarily mean one should compromise operational efficiency nor flexibility. Indeed there

will be times to acquiesce, but as Kenney demonstrated, there will be times to 'win others over' to an air commander's point of view.

During the defensive phase of the Papuan Campaign, Kenney clearly demonstrated his *coup d'oeil*. This incident occurred during the continued Japanese advance toward Port Moresby on 9 September 1942. MacArthur had sent Kenney to Port Moresby to monitor the situation. When Kenney arrived he had a conversation with Rowell and became very concerned with the sense of panic at Port Moresby. Kenney did not understand how 12,000 troops could not defeat 2,000-3,000 Japanese nor why Rowell was preparing to fall back to a defensive perimeter that would not protect most of the airfields at Port Moresby. If this proposed position became the actual position, then the Japanese could take over the airfields, bring in dive bombers, and stop resupply efforts for Allied troops defending Port Moresby.⁴⁴⁶ During this period of panic, Kenney knew that his CAS and interdiction efforts along the Kokoda trail were slowing down the Japanese offensive, but he realized the Australian defenders at Port Moresby needed a psychological lift and he recommended that US troops be sent to Moresby. MacArthur followed Kenney's advice and sent the US 32nd division to Port Moresby via airlift and sealift.⁴⁴⁷ Kenney's call to boost morale was timely and effective. The significance of this psychological boost is reflected in a comment of General MacArthur when he said that "...the Aussies told him we were saving the situation up on the trail....Blamey stopped all conversation about withdrawing any farther and said that in a few days he was passing to the offensive..."⁴⁴⁸ Kenney's insight had allowed him to suggest an appropriate action during a time of seeming gloom. The airlift that Kenney recommended was also a demonstration of his ability to work outside the rules as this was the first time US combat units were deployed by airlift.⁴⁴⁹

Kenney had mastered an ability to operate outside the rules at the appropriate times and within the appropriate situations. He had a reputation for being an innovator. In his own words, "We are doing things nearly every day that were never in the books. It is remarkable what you can do with an airplane if you try."⁴⁵⁰ An example of this ability was demonstrated

on 12 September when nine A-20s of the 89th Attack Squadron bombed the Buna airfield with Parachute Fragmentation bombs. This attack was the first ever to use this weapon which sent fragments out to a 100 yard radius at about two to three feet above the ground. Following this successful attack, Kenney ordered 125,000 more from Arnold and ordered his personnel to start converting regular fragmentation bombs to parachute fragmentation bombs. Kenney had helped design the weapon and acquired war reserve parafrag bombs for training and on this day, actual employment.⁴⁵¹

Knowing when to operate outside the rules is essential for a commander to achieve success. A possible guideline to follow is to do so when things are not working, or if one is failing to achieve the mission within given constraints. An example of this was demonstrated when Kenney recommended and executed the airlift to Wanigela Mission. According to Kenney it was not a standard practice nor was it popular with MacArthur's staff

When it came to getting across the mountains...we landed some light planes in there [Wanigela Mission] with some sickles and got some natives to help cut the...grass and made a runway to fly troops in--right in behind Buna, our objective. Well, that was all wrong because, according to the old rules, you are not supposed to go anyplace unless you build a line of supplies to retreat on in case you run into trouble. So they [his staff] told MacArthur, "Look, you get those people over there, and the...Japs will tangle them up, and then where...can they go?" There is no line of retreat." Well, MacArthur bought it, but gee, his staff hated my guts.⁴⁵²

The minimum daily requirement for HATRACK air supply was 61,900 pounds.⁴⁵³ The importance of the airlift was that most of the US 32nd Division would not have to march across Papua, and thereby, be better able to fight against the Japanese at Buna and allow MacArthur to seize the initiative.⁴⁵⁴

Kenney also introduced skip-bombing to the Southwest Pacific Theater. Although BGen Ken Walker, Kenney's Fifth Bomber Commander, was against the idea of skip-bombing, Kenney pursued the matter. Walker had written the book on high-altitude bombing while he was an instructor at the Air Corps Tactical School (ACTS) and skip-bombing wasn't in the

book.⁴⁵⁵ Kenney designated the 90th Squadron as a specialized skip-bombing squadron and after intensive training they performed brilliantly during the Battle of Bismarck Sea scoring 17 direct hits out of 37 attempts. Their efforts, in conjunction with the A-20s destroyed all seven Japanese merchant vessels in the naval convoy.⁴⁵⁶ In short, Kenney was able to demonstrate his innovative nature throughout his experiences in Papua. The nature of his command can be summarized with the words of author Martin Van Creveld, "...historical advances in command have often resulted less from any technological superiority that one side had over another than from the ability to recognize those limitations and to discover ways--improvements in training, doctrine, and organization--of going around them."⁴⁵⁷

Kenney demonstrated a presence of mind to handle unexpected taskings. Although MacArthur let Kenney run his own operations, a variable which neither man could accurately predict was the sudden and usually unexpected additional requests from the South Pacific Theater. General Kenney was tasked by MacArthur on numerous occasions to support operations in the adjacent theater while he was trying to accomplish objectives in the Southwest Pacific Theater. For example, on 14 September 1942, when the Japanese had reached Ioribaiwa Ridge, only 30 miles from Port Moresby, Ghormley requested help from Fifth Air Force to attack Rabaul airfields to allow a US convoy to resupply Guadalcanal. The day before Kenney had ordered Walker to bomb Lae and Salamaua airfields in New Guinea, first with parafrag bombs and followed up with 2000-lb bombs. After receiving the request from Ghormley, Kenney changed the tasking.

I told General MacArthur I would put one squadron of B-17s on Rabaul each day and have the [Royal Australian Air Force] (RAAF) Catalinas work on the Nip airdromes over at night. I called Walker and gave him the change of mission for the B-17s. They were already loaded with 2000-pound bombs...so they had to unload and put in the smaller bombs for destruction of airplanes on the ground in the Rabaul area.⁴⁵⁸

The impact of the results of Kenney's decisive thinking are reflected in a commendation he received from MacArthur on 23 September.

Admiral Ghormley has informed me that he and Admiral Turner are convinced that the attack by the element of the 19th Bombardment Group upon Vunakanau on the 16th contributed materially to the successful accomplishment of Admiral Turner's mission in Guadalcanal. Admiral Ghormley asks that there be conveyed to the crews of the six B-17s his commendation, "Well done."⁴⁵⁹

Kenney's presence of mind allowed him to reallocate his resources and accomplish a mission of greater priority during a pressing time. This incident is also an example of Kenney exercising good judgment by evaluating priorities and adjusting operational resources accordingly.

During most situations Kenney displayed a sensitive and discriminating judgment throughout the Papaun Campaign. On the positive side, this observation is supported by the interaction Kenney had with Ghormley and other naval leaders at a conference on 28 September held in Noumea. At this meeting, Kenney demonstrated good judgment by not acquiescing to their desires and agreeing to help the South Pacific Theater as much as he could within the constraints of both theaters.⁴⁶⁰

Kenney also demonstrated good judgment by giving a large degree of autonomy to his subordinate commanders for the execution of the campaign at the tactical level. This dimension of judgment comes into play when communicating with and controlling one's subordinates during the execution of a campaign. First, one must know and understand the subordinate commanders in the operational command theater. Second, an operational commander must know the capabilities of his subordinates. Given these understandings, the commander can tailor his style of command to a particular situation. General Kenney had the required knowledge to implement a form of air *Auftragstaktik*, whereby he gave BGen Ennis C. Whitehead, Advanced Echelon Commander at Port Moresby, general operational directives to allow his subordinate wide flexibility in carrying out the assigned mission. This philosophy is reflected in a message from Kenney to Whitehead,

Don't ever worry about your authority for sufficient latitude in dealing with an actual situation. I still have plenty of confidence in your judgment and expect you to use it regardless of seemingly stereotyped orders which you may get from me from time to time.⁴⁶¹

Essentially, Kenney used mission-type orders to communicate his intentions. This style of command preserved one of the inherent strengths of airpower--flexibility. He afforded great flexibility to the tactical leadership. This factor was critical due to the dynamic and unpredictable tempo of operations and the required innovative changes in tactics.⁴⁶² In brief, Whitehead could tailor his operations in a timely manner without having to worry about getting permission to take action.

Kenney also demonstrated good judgment by using ULTRA intercepts well. Although Drea, author of MacArthur's ULTRA: Codebreaking and the War against Japan, 1942-1945, suggests that MacArthur chose not to use ULTRA if the information did not support his strategy or plans, this is not the case with Kenney. "Kenney became one of the most receptive 'clients of ULTRA.' Within two weeks of his arrival in MacArthur's theater, Kenney relied on navy-supplied ULTRA to strike a Japanese resupply convoy headed from Rabaul to Buna....the potent combination of ULTRA in the hands of a willing commander would prove its value throughout the air war in MacArthur's theater."⁴⁶³

However, Kenney did not demonstrate good judgment in at least one instance. Briefly, he sent 12 B-17s and their crews back to the US before 12 new B-24s were declared operationally ready which led to a significant loss of combat capability for over two months. In this instance Kenney did not demonstrate good judgment that resulted in a loss of bomber combat capability from 23 October until 14 December.

Kenney knew the capabilities of his men and material resources. Although he was very demanding of both, he did as much as he could to extend those limits or get replacements. An example that supports this assertion occurred on 17 October 1942 when the South Pacific Theater needed additional help from Kenney's bombers. After completing their missions,

Kenney said, "By this time I had to go to General MacArthur and tell him that my bomber crews were worn out and, regardless of anyone's needs, they needed a rest and the airplanes needed maintenance."⁴⁶⁴ Additionally, on 19 October he also instructed Walker to "pick out 12 B-17s and 12 of the most tired crews, so these could be sent off as soon as the B-24s arrive."⁴⁶⁵ Finally, he adopted a rotation policy to keep the pilots fresh. He sent pilots back to Sydney after they had been on combat duty for two or three months. He also granted a 10 day leave to tired or jittery combat pilots.⁴⁶⁶

Objectivity is overcoming one's own bias or prejudice. It also entails gathering all the facts that are possible to assemble within a given time period. Kenney demonstrated objectivity to his men on 19 October 1942 when he issued an order for his airmen to wear long trousers and long-sleeved shirts. However, before he made this decision he had one squadron wear the long clothing and another squadron wear shorts and short sleeves for a one month period. Kenney then compared the results, "At the end of the trial period, I had two cases of malaria in the long-trousered, long-sleeved squadron and sixty-two cases in the squadron wearing shorts. The evidence was good enough for the kids as well as for me, so I issued the order."⁴⁶⁷

Another example which demonstrates Kenney's objectivity came early during his assignment to the theater. During his initial visit to his front line combat units, he learned that parts and supplies needed at the forward area were being delayed or not delivered because the requisition forms were not correctly completed. Eighteen of 30 B-17s at Mareeba, Australia were out of commission for lack of engines and tail wheels.⁴⁶⁸ Rather than firing the officer responsible for this practice Kenney visited the supply depot at Charters Towers, Australia himself to investigate the situation. He found the colonel in charge to have the wrong customer in mind. The supply colonel was turning down requisitions from New Guinea/Papua because notations were made on the wrong line or the depot was too busy sorting out other items. The unnamed colonel assured his transfer when he said, "it was about time those combat units learned how to do their paper work properly."

Kenney had listened to the evidence firsthand and sent the man home on the next plane headed for the US. The general immediately established a new policy to fill all requisitions, either written or verbal, regardless of inventory and if possible, parts were to be flown to the applicable destination.⁴⁶⁹

Trait Observations Within the Moral Sphere

Moral courage or *courage d'esprit* is the courage to accept responsibility. Kenney clearly demonstrated moral courage to accept the responsibility by taking the job as Commander of the Allied Air Forces in the Southwest Pacific Theater under MacArthur. First, MacArthur requested Lt Gen Frank M. Andrews, but Andrews turned down the offer.⁴⁷⁰ Gen George Marshall then suggested Maj Gen James H. Doolittle or Kenney, MacArthur chose Kenney.⁴⁷¹ MacArthur had a reputation as being demanding and difficult to work for. Kenney accepted anyway.

Kenney demonstrated personal courage on 18 August when he flew a B-17 at an altitude of 100 feet on a personal reconnaissance of the Papuan theater. He was looking for possible emergency landing fields on the southern coast of Papua and for areas for future airstrips along the northern coast.⁴⁷² He also was aware of the dangers of this flight when he said, "There were several fires in the Buna area and along the trail to Kokoda where our fighters and bombers had been operating while I was flying around Wanigela, but I did not go close enough to make any detailed inspection. The Jap antiaircraft boys might have resented my presence..."⁴⁷³ After the reconnaissance mission of 18 August, MacArthur ordered Kenney to remain south of the Owen Stanley Mountain Range.⁴⁷⁴ As almost all of the fighting was on the other side of the mountains, Kenney never was allowed to face personal danger in the air after 18 August during the Papuan Campaign. Nonetheless, it is important to note that during WWI, Kenney had flown 75 missions, downed two German aircraft, and received the Distinguished Service Cross and Silver Star.⁴⁷⁵ Therefore, Kenney did have personal courage to face personal danger, but he only demonstrated this once during the Papuan Campaign.

Throughout the Papuan Campaign Kenney clearly demonstrated determination. This trait is similar to one having a sense of mission, or an ability to prevail whatever the situation. The best example of Kenney's relentless determination occurred during the offensive phase of the campaign, after the transports had delivered US troops to the coast of northern Papua and bad weather was stopping resupply missions. MacArthur said, "...the troops on the other side of the Hump [Owen Stanley Mountains] were low on food...they [his staff] advised withdrawal and an early extrication from the whole show."⁴⁷⁶ At this point, Kenney described to his boss what Major Hampton, an outstanding transport pilot and his radio operators had designed to overcome the problem. Pilots would fly to an airdrome on instruments and home in on a radio signal until the compass needle would swing 180 degrees at which time they would be directly over the signal and airfield. At this precise moment cargo bundles would be pushed out the back of the aircraft for a parachute delivery. MacArthur bought the idea and the army troops were resupplied to continue their offensive toward Buna.⁴⁷⁷

Strength of will is measured through four factors: firmness, strength of character, energy, and staunchness. During the Papuan Campaign Kenney demonstrated his resilient strength of will in each of these categories.

Firmness is a trait that describes men whose views are stable and constant. These types of view are derived from reflection. An example of this is found during Kenney's initial visit to Port Moresby on 30 July 1942. He listened to a mission briefing at Seven Mile Airstrip and found out that the bombers did not have a particular target selected for the mission, as most of them did not think they would arrive in the target area. Even though Kenney would not take over as the official Allied Air Commander until 4 August, he ordered Whitehead to ensure every bombing mission was assigned primary, secondary, and tertiary targets.⁴⁷⁸ This policy which never changed throughout the campaign is a clear indication of Kenney's firmness.

In most instances Kenney demonstrated strength of character during the campaign. Although he had strong feelings, he maintained his self-control most of the time. One

example that revealed his character occurred when Kenney had just received correspondence from Washington directing him to attack shipping at Buin-Fasi and the Shortland Islands, both areas being the within the Solomon Chain near Bougainville, instead of attacking Japanese airfields.⁴⁷⁹ Kenney disagreed strongly with this directive as he later related during a 1974 interview

[the message from Washington asked] 'Why aren't you bombing the Japanese shipping...instead of wasting your time bombing Japanese airdromes? All our experience shows that bombing airdromes is a futile exercise.' Well...some of his [Arnold's] dumb staff would get out a rule, and they would measure the distance from Port Moresby to the Shortlands. They said it was within the range of the B-25s, B-26s, and B-17s. The point they didn't figure was that I had to climb over a 15,000-foot mountain range before I got going anyplace. That burns up a lot of gas, and , if I go there, I haven't got gas enough to come back. Furthermore, I am not going to send my bombers out unprotected when the Japs have got radar all over the place, and everytime that an airplane went to Rabaul, for example, it would be intercepted by 75 to 100 Japs. Well...I told MacArthur, 'Look before I play across the street, I got to get these...Japs off of my front lawn.' So we started in hammering away, destroying their airdromes. The Japs were on dirt runways, and if you put a 2,000-pound bomb into that dirt with a delay fuse on it, you had a 50-foot deep and 10-feet across and it was full of water.⁴⁸⁰

Although he was rather frustrated, he kept his cool, "Some day I'll lose patience over some of these...messages his [Arnold's] staff cooks up at their desks in Washington."⁴⁸¹

On another occasion Kenney did not maintain his calm nature. The incident occurred in on 8 September and a number of pressures were building inside Kenney. First, he found out that the Japanese had taken Kokoda Gap and the Australians were still in retreat toward Port Moresby. Second, he was forced to ground all P-38s because the leak-proof tanks were improperly made and were falling apart at the seams. Then he found out that the last 25 P-38s had arrived in his theater without feeds for the guns. Kenney finally lost his temper when he called Lincoln at Melbourne and found out that he had not followed Kenney's verbal instructions of 22 August to move his depot to Brisbane and was simply awaiting written confirmation. In the words of Kenney, "I almost pulled the telephone out by the roots."⁴⁸²

Kenney demonstrated an ability to motivate soldiers to inspired action. He recognized that his pilots and ground crews had a very low morale when he took over as commander and he met this challenge. Kenney was a master at motivating the airmen within his air force to get the job done and feel good about doing it. He set challenging goals for his aircrews, encouraged imaginative solutions to problem-solving, and recognized his people appropriately when they met goals or solve problems.⁴⁸³ A good example that illustrated his motivational ability occurred during on 29 November 1942 when the Japanese were attempting to resupply Buna with a convoy of four ships and Kenney was tasked to stop them. Five B-17s of the 63rd Squadron made two flights from Port Moresby to the target area during the night, but did not find the Japanese convoy due to poor weather. These flights were made after an initial flight to the port from Australia. Although the crews were extremely tired, Kenney convinced them to repeat the mission for a third time. He convinced the crews with these words, "You have fifty Americans aboard these five B-17s. There are at least 10,000 Americans over there depending on us. I don't want to lose one of those kids any more than you do, but if we have to lose someone to save those other 10,000 we will have to do it, that's all."⁴⁸⁴ All five B-17s flew the third mission, found the Japanese destroyers, and sank two of them. Kenney's ability to motivate the crews appears to have been the critical ingredient in achieving this result. General Hap Arnold also saw the results of Kenney's ability to motivate his subordinates as he remarked in his diary on 25 September 1942 during his visit to the theater, "He [Kenney] is a real leader...All those who were worn out and nervous wrecks are now eager to fight and withdrawing their requests to go home."⁴⁸⁵

Kenney's energy seemed to flow from an emotional base derived from a longing for honor in the eyes of the 'Big Man', as Kenney described General MacArthur. "...a very important guy named Douglas MacArthur believed in me. He would not let me down and I would not let him down. I was quite sure that he knew that, too."⁴⁸⁶ He also claimed that it

was fun working for MacArthur.⁴⁸⁷ This highly emotionally charged energy base allowed Kenney to motivate his own troops.

Kenney demonstrated his staunchness or his will's resistance to a single blow twice. The first experience came when Walker was reported missing from a combat mission on 5 January 1943. Kenney knew "Ken had not been sleeping well and was getting tired and jumpy. The strain and the tropics were wearing him down. I decided that at the end of this month, if a couple of weeks' leave didn't put him back in shape, I'd have to send him home."⁴⁸⁸ According to other members on the mission, Walker's plane was last seen headed south approximately 25 miles south of Rabaul, losing altitude with one engine on fire and two Japanese fighters on its tail. Kenney ordered a comprehensive search of the area, but Walker's plane was not found.⁴⁸⁹ In the letter home to Walker's next of kin, which included Ken Walker Jr., his 17 year old son, Kenney stated that he had been a friend of Ken for many years and he was very sad at his loss.⁴⁹⁰ Nonetheless, on 9 January 1943 Kenney wired Arnold for BGen Howard Ramey to replace Walker as the Commander of Fifth Bomber Command.⁴⁹¹

Nonetheless, Kenney found a replacement, kept up his drive, and continued on with the campaign.

Trait Observations Within the Physical Sphere

As far as General Kenney's personal physical capabilities, he had what it took to function very well. He had the personal capability to withstand the rigors of mental and physical stress on one's body. He did not show signs of stress affecting his performance during the entire campaign. An indication of Kenney's physical stamina was recorded in the cover story of *Time Magazine*, 18 January, 1943, "In five months in the Southwest Pacific, the man chiefly responsible for these successes has yet to have a day off, or even want one. General Kenney's office is wherever he and Captain Chase are at the moment. Places are always laid for George Kenney at two luncheon tables, one at Port Moresby, the other nearly 2,000 miles south in Australia."⁴⁹²

Summary of Trait Observations

Again, the question remains, what are the elements of genius for air command and how does this case study help answer this question? Kenney clearly demonstrated the following cognitive traits: superior intelligence, an ability to work in concert with other commanders, *coup d'oeil*, an ability to operate outside the rules, presence of mind, knowledge of the capabilities of one's people and material resources, and objectivity. Although he exercised good judgment during most of the campaign, he did take a calculated risk that did not demonstrate good judgment. This lapse in judgment may be explained by his overriding concern with the physical limits of the men flying B-17s of the 19th Bomb Group, rather than with added combat capability. Nonetheless, whatever the reason, it was an example of a lapse in good judgment which was not typical of Kenney.

Kenney clearly demonstrated the following moral characteristics: moral courage, personal courage, determination, firmness, energy, and staunchness. His personal courage was only tested once during the campaign because MacArthur limited his exposure for the bulk of the campaign. Also, Kenney did demonstrate strength of character, but he did let his temper get the best of himself on at least one occasion. A valid observation is that Kenney had a very strong will as the measures of character, firmness, energy, and staunchness indicated. Furthermore, his source of energy seemed to be based on emotion rather than intellectual conviction.

Within the physical sphere Kenney clearly demonstrated his physical stamina in his ceaseless travels throughout the Southwest Pacific Theater. The evidence does not fully explain how he maintained this rigorous schedule in terms of his concern for his own personal physical well being.

Concluding Observations

The characteristics demonstrated by Kenney have a very significant overlap with those discussed in the theory for land command genius. The common cognitive traits for this case are as follows: superior intelligence, *coup d'oeil*, an ability to operate outside the rules, an

ability to work in concert with commanders of other services, presence of mind, knowledge of the capabilities of one's people and material resources, and objectivity. Kenney receives a mixed rating on judgment during the campaign, although he did exercise good judgment during most situations throughout the campaign. The single unique cognitive trait demonstrated that was not in common with the theory of land genius is a subset of judgment in which he used a form of air *Aufstragtaktik*.

The moral elements demonstrated by Kenney that are in common with the theory of genius for land command include moral and personal courage, determination, firmness, energy, and staunchness. In this case, Kenney demonstrated strength of character most of the time and the time he lost his temper it did not appear to influence his decision-making process. In short, the moral elements demonstrated by Kenney show a precise overlap with the elements suggested by the theory of genius for land command.

The source of the genius Kenney demonstrated for his own physical well being was not identified during this study. However, Kenney demonstrated a robust ability to travel throughout the theater and withstand the stress of command as no evidence suggested any negative effects. Briefly, Kenney had the physical strength to command.

³⁴⁶ Lt Gen Robert L. Eichelberger, Our Jungle Road to Tokyo (New York: The Viking Press, 1950), 17.

³⁴⁷ *Ibid.*, 34.

³⁴⁸ United States Strategic Bombing Survey, vol. 73, The Campaigns of the Pacific War (Washington D.C.: Naval Analysis Division, 1 July, 1946), 173.

³⁴⁹ Rear Adm Sadatoshi Tomioka, Chief, First Bureau (Operations), Imperial General Headquarters, Navy Section, cited in Reports of General MacArthur: Japanese Operations in the Southwest Pacific Area, vol. 2, part 1, Compiled from Japanese Demobilization Bureaux Records (Washington D.C.: US Government Printing Office, 1966), 133.

³⁵⁰ Robert Elmer Barde, "The Battle of Midway: A Study in Command," (PhD diss. University of Maryland), Located in Collection 37, Series II, Box 15, Naval Historical Collection, (US Naval War College, Newport, R.I., 1971), 48.

³⁵¹ Imperial General Headquarters Navy Order No. 20, 11 July 1942, cited in Reports of General MacArthur: Japanese Operations in the Southwest Pacific Area, vol. 2, part 1, Compiled from Japanese Demobilization Bureaux Records (Washington D.C.: US Government Printing Office, 1966), 138.

³⁵² Southeast Area Operations Record, 26, cited in Reports of General MacArthur: Japanese Operations in the Southwest Pacific Area, vol. 2, part 1, Compiled from Japanese Demobilization Bureaux Records (Washington D.C.: US Government Printing Office, 1966), 138.

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- ³⁵³ Maj Richard L. Watson, Jr., Assistant Chief of Staff, Intelligence, Historical Division, AAF, "Air Action in the Papuan Campaign, 21 July 1942 to 23 January 1943," US Army Air Forces Intelligence Summary No. 17, SW Pacific Theater (Maxwell AFB, Ala.: USAF Historical Research Agency (USAF/HRA), August, 1944), 18, 101-17.
- ³⁵⁴ Ibid., 18.
- ³⁵⁵ USSBS, vol. 73, 173.
- ³⁵⁶ Watson, Papuan Campaign, 18.
- ³⁵⁷ Eichelberger, 22.
- ³⁵⁸ Ibid., 11.
- ³⁵⁹ Samuel Eliot Morison, History of United States Naval Operations in World War II, vol. 4, Coral Sea, Midway and Submarine Actions May 1942-August 1942 (Boston, Mass.: Little, Brown and Company, 1951), 262. and Reports of General MacArthur: Japanese Operations in the Southwest Pacific Area, vol. 2, part 1, Compiled from Japanese Demobilization Bureaux Records (Washington D.C.: US Government Printing Office, 1966), 109.
- ³⁶⁰ Samuel Eliot Morison, History of United States Naval Operations in World War II, vol. 3, The Rising Sun in the Pacific 1931-April 1942 (Boston, Mass.: Little, Brown and Company, 1948), 260-1. and General Staff of Gen Douglas MacArthur, Reports of General MacArthur: The Campaigns of MacArthur in the Pacific, vol. 1 (Washington D.C.: US Government Printing Office, 1966), 33-4.
- ³⁶¹ Maj Gen George C. Kenney's report of mission ready aircraft is supported by US Army Air Forces Intelligence Summary No. 17, Appendix 3, SW Pacific Theater, 1944 (Maxwell AFB Ala.: USAF/HRA), 158, Document # 101-17.
- ³⁶² Notebooks of Gen George C. Kenney, vol. 1, entry for 6 August, 1942 (Maxwell AFB, Ala.: USAF/HRA), Document # 0889165, Microfilm # 27131.
- ³⁶³ US Army Air Forces Intelligence Summary No. 17, Appendix 8, SW Pacific Theater, 1944 (Maxwell AFB, Ala.: USAF/HRA), 167-8, Document # 101-17.
- ³⁶⁴ Richard M. Leighton and Robert W. Coakley, United States Army in World War II: Global Logistics and Strategy 1940-1943 (Washington, D.C.: US Government Printing Office, 1955), 388.
- ³⁶⁵ Leighton and Coakley, 732-3. The numbers quoted in the text are derived from the tables located in appendices E-1 and E-2 by adding the monthly increments from July 1942 through January 1943.
- ³⁶⁶ Ibid., 392.
- ³⁶⁷ Ibid., 393.
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Chapter 6 Analysis

Analytical Criteria

The difficulty of analyzing a challenging topic such as genius in war was clearly recognized by Sir Julian Corbett when he said

The conduct of war is so much a question of personality, of character, of common sense, of rapid decision upon complex and ever-shifting factors, and those factors themselves are so varied, so intangible, so dependent upon unstable moral and physical conditions, that it seems incapable of being reduced to anything like true scientific analysis.⁴⁹³

Nonetheless, an objective analysis of the evidence begins with establishment of the criteria for admission of a trait to the pattern of those required for the exercise of genius among operational level air commanders. As stated in chapter 1, these criteria are first, that each element of genius must be clearly documented within the individual commanders and linked to operational consequence; and second that a trait must be demonstrated by at least two of three commanders assessed. With these criteria in mind a review of the traits demonstrated by each commander is in order.

Summary of Traits Demonstrated by Each Commander

Dowding

Dowding demonstrated the following cognitive characteristics without conflicting evidence: an ability to work outside the rules, an ability to work in concert with commanders of other services, *coup d'oeil*, objectivity, and knowledge of the capabilities of one's people and material resources. He also displayed an above average intelligence, but he was not brilliant. He also demonstrated a discriminating judgment except, perhaps, for an awareness of his own physical well being. Dowding exercised good judgment when he employed a form of air *Auftragstaktik* in giving appropriate latitude to his subordinate air commanders. Essentially, he gave his group commanders mission-type orders which preserved their flexibility in operations. His presence of mind was not tested as sorely as it might have been had he not had the benefit of

radar and ULTRA information. Nonetheless, his presence of mind was tested when some German fighters started carrying bombs and the RAF had to determine which fighters to intercept in a given formation.

Dowding demonstrated the following moral characteristics without conflicting evidence: moral courage, determination, strength of character, firmness, energy, and staunchness. His personal courage was not tested during the campaign, but he had demonstrated this trait during WWI on several occasions. His energy was not derived from ambition as he was asked to retire twice before the Battle of Britain, and he knew he would retire soon, being 59 years old. The evidence indicates that his energy came, rather, from a sense of duty.

Within the physical sphere, Dowding did not display a high degree of concern for his personal physical well being. However, he did perform well during the entire campaign and no evidence directly supports an assertion that his lack of concern affected his decision-making process.

Spruance

Spruance demonstrated the following cognitive characteristics without conflicting evidence: judgment, an ability to work outside the rules, *coup d'oeil*, objectivity, knowledge of the capabilities of one's people and material resources, superior intelligence, and deliberate modesty. An important aspect of his judgment is reflected in his use of air *Aufstragtaktik* in his operations. He communicated his mission to his subordinate commanders and let them devise and execute the actual details of operations. The evidence suggests a mixed rating on his demonstration of presence of mind. In the most significant instance in which he did not demonstrate a presence of mind his inexperience in carrier operations appeared to be a factor. On the other hand, he did not demonstrate an ability to work in concert with commanders of other services during the operation. The lack of robust communications may have been a factor in this apparent lack of coordination during operations.

He demonstrated the following moral traits without conflicting evidence: moral courage, determination, firmness, energy, and staunchness. His personal courage was not tested during the

operation, but in later operations he clearly demonstrated this trait. Although he did demonstrate strength of character during the campaign, there were two times when he lost his temper. However, in each of these cases it appears the temporary loss of temper did not seem to affect his decision-making process adversely.

Within the physical sphere, Spruance clearly demonstrated a methodical and systematic concern for his personal health. This attention to personal fitness served him well.

Kenney

Kenney demonstrated the following cognitive traits without conflicting evidence: an ability to work outside the rules, an ability to work in concert with commanders of other services, *coup d'oeil*, objectivity, knowledge of the capabilities of one's people and material resources, superior intelligence, and presence of mind. The only cognitive trait that has a mix of evidence is his judgment. On the one hand he exercised excellent judgment by using mission-type orders when communicating to his subordinate commanders. This is clearly documented in his message to Whitehead. On the other hand, he lost some bomber combat capability for about two months because he let 12 B-17s and their crews return to the US before the replacement B-24s were functioning properly.

He demonstrated the following moral traits without conflicting evidence: moral courage, personal courage, determination, firmness, energy, and staunchness. He also demonstrated strength of character but he did lose his composure on at least one occasion. However, this instance did not seem to affect his decision-making process. Kenney's energy was emotionally based and seemed to come from an ambition to please MacArthur.

Although no evidence directly supports his concern for his personal physical well being, he demonstrated a resilient physical stamina. It is not clear how he maintained such a demanding schedule flying all over the Southwest Pacific Theater, but he did.

Traits That Meet the Criteria for Air Commanders

The following cognitive elements were clearly demonstrated and common to at least two of the three air commanders: an ability to work outside the rules, an ability to work in concert

with commanders of other services, *coup d'oeil*, objectivity, knowledge of the capabilities of one's people and material resources, superior intelligence, a sensitive and discriminating judgment, adoption of air *Aufstragtaktik* using mission-type orders, and presence of mind. Except for an ability to work in concert with commanders of other services and superior intelligence, all other traits were common to all three commanders.

Within the moral sphere, the following traits were clearly demonstrated and common to at least two of the three air commanders: moral courage, determination, strength of character, firmness, energy to motivate their people, and staunchness. Although personal courage was not clearly demonstrated by two of the three commanders, all commanders demonstrated personal courage in previous combat. Also, two of the three commanders lost their composure during their respective campaigns, but these incidents did not adversely affect their decision-making process.

Within the physical sphere each of the commanders demonstrated an ability to withstand the rigors and pressures of command. None of them was limited by his physical capabilities. Only one of the three demonstrated a physical fitness program.

Analysis From an Operational Perspective

The trait of presence of mind is more challenging to the air commander than his surface counterparts. First, time is compressed for the air commander; therefore, events happen faster. Also his space is expanded in size, both vertically and horizontally. In the case of Dowding, he took advantage of the ULTRA intercepts and the radar system over England. He was also very familiar with the radar system since he had been in charge of it for the four years prior to the Battle of Britain. All of these factors helped to minimize unexpected attacks. He also adopted a policy of avoiding conflicts over the English Channel where the advantage of radar was not as good or not effective at all depending on the precise location. He was well aware of the increased difficulty of maintaining presence of mind, and he took appropriate actions to minimize the challenge.

Spruance had a basic understanding of his presence of mind challenge; he did not, however, have any experience in carrier operations. In some ways Spruance faced a more

difficult time and space continuum than Dowding or Kenney. In Spruance's case, all aircraft departure and landing locations were moving. Hence, Spruance faced a dynamic operational space that had to be continually reevaluated over time. Not only did Spruance have to consider aircraft locations, he also had to consider submarine and surface vessel threats to his aircraft resources. Clearly, three dimensional space-visualization is a key component of genius for the operational air commander. Airpower commanders at sea have an additional element to consider that their land-based brethren do not: the ability to visualize space in the third dimension down as well as up. Spruance had to worry primarily about enemy submarines when he decided to turn on the lights for returning pilots.

Kenney's presence of mind was also challenged in the dynamic Southwest Pacific Theater. Aircraft range and airfield locations were two factors that he had to consider on a daily basis both for his and the enemy's air forces. He also had to weigh the relative importance of tasking between MacArthur's and Ghormley's theaters.

Each commander's ability to work outside the rules was influenced by airpower's sensitivity to technological change. In the case of Dowding, he devised new codewords for fighter interceptors. This innovation would have been irrelevant if the radars could not locate enemy aircraft and identify altitudes. Similarly, Spruance brought back his fighters for night landings by using navigational beacons in addition to turning on the lights. It is not clear that he would have had such an option if the planes did not have a beacon capability. Finally, Kenney's Fifth Air Force fighters would not have been able to escort bombers without the development of drop tanks to extend their range. In short, each of the commanders tailored the rules using technological innovations to improve tactical realities for their operations.

Two of the three commanders clearly demonstrated an ability to work in concert with commanders of other services. In Dowding's case, he worked closely with Pile to improve the situational awareness of Fighter Command's operational control rooms by using the army's Radio Location apparatus to improve inland tracking accuracy and elevation estimates. Essentially, Dowding was fighting to achieve air superiority; and he convinced Pile to use army assets to

assist Fighter Command. This is an unusual example of a surface force supporting airpower, but both Dowding and Pile understood the critical situation and agreed to the sharing of resources.

Kenney was also trying to achieve air superiority, but he was supporting land actions in two theaters at the same time as well. Nonetheless, he was able to work effectively with both MacArthur and Ghormley as he was able to concentrate on achieving air superiority without alienating either commander. Kenney balanced the need for independent air operations with the complementary role that airpower played in supporting surface operations. Additionally, surface forces supported airpower as well by securing airfields for Kenney's aircraft. Airpower and surface power were truly complementary. Briefly, two of the three commanders knew the relative importance of independent air operations, conveyed that importance to surface commanders, and consequently, achieved air superiority in their respective theater of operations.

Each of the three commanders demonstrated the use of mission-type orders which can be viewed as a form of air *Auftragstaktik*. Adoption of this method of operation added flexibility to the tactical realities of air operations. This is significant since flexibility allows commanders to exploit some of the inherent strengths of airpower--such as determining whether to hit a primary, secondary, or tertiary target depending on the tactical situation.

In each case the strategic context of the operation tended to limit available resources. In Dowding's situation, the German advance across France led to the RAF sending numerous fighter squadrons to the continent. This decision was driven by strategic concerns for the defense of France and had nearly dire consequences for the defense of England. In the case of Spruance, his assets were limited by the strategic concern for naval presence in the Atlantic Theater as well by the limited numbers of total naval assets at the time of the Battle of Midway. Kenney's resources were limited by the strategic priority of Europe over the Pacific Theater.

Comparison of the Elements of Genius for Surface and Air Command

As chapter 2 suggests, there is a significant overlap of the genius for operational surface and air command. If one assumes that the identified elements satisfy the criterion established in this study as elements of genius for operational air command, then the following observations are valid. First, there is nearly a total overlap within the moral sphere. As the elements of moral courage, determination, strength of character, firmness, energy to motivate one's people, and staunchness are common to both mediums. The only appreciable difference between the elements of land and air command genius is personal courage. The operational level air commander may have this trait, but he is generally not tested as he usually does not fly into combat. If he comes under attack, it is normally at his operational headquarters (land or sea) or when he is visiting troops in the field. In short, the air commander is generally exposed to less immediate threats than a comparable surface commander.

Likewise, a genius for surface and air operational command have a similar requirement within the physical sphere. In each case, the commander must have the physical stamina and nature to handle the pressures and rigor of command.

The largest divergence between the elements of genius for surface air command occurs within the cognitive sphere. Although the elements themselves are the same, with the exception of air *Aufstragtaktik*, there are significant differences in degree.

Therefore, the air commander will tend to face more difficult challenges within the elements of *coup d'oeil* and presence of mind. This assertion is supported by the notion that an air commander has less time to evaluate assets that encompass a much greater physical space. Furthermore, as was demonstrated at Midway, the lethal forces available to airpower can decide an entire operation in minutes.

The air commander must be able to work in concert with commanders of other services. This ability is critical to the success of any joint operation that depends on airpower. Here, an air commander faces a greater challenge than the surface commander because he so many options to consider. First, airpower can be used independently to attack a variety of centers of gravity (COGs). These COGs may or may not include the armed forces of the enemy. The air

commander must choose which COGs to attack. Additionally, airpower can be used in a supporting role. Therefore, the air commander must first determine what mode of employment is most appropriate, independent or auxiliary, and then convince his surface commanders of that selection. Furthermore, the air commander must consider either the direct or indirect application of airpower for either mode.⁴⁹⁴ For example, first achieving air superiority may be the highest priority as Kenney recognized in the Southwest Pacific Theater. He then had to convince MacArthur and Ghormley to accept that task as being the highest priority. In short, the operational level air commander has more options to consider than his counterpart surface commander who typically attacks the enemy's fielded forces. In sum, within the cognitive sphere, the air commander at the operational level seems to face greater challenges in *coup d'oeil*, presence of mind, and an ability to work in concert with commanders of other services.

Analytical Considerations

Although the three historical examples analyzed in this study demonstrated potential elements of genius for air command, there are a few considerations that must be evaluated before attempting to make definitive conclusions. As a starting point, one must consider that this analysis may have overlooked significant traits or characteristics of genius for air command. Perhaps future researchers will find additional data or evidence from which to derive such traits or they may perceive different traits from the evidence thus far presented.

A very important consideration to address is whether the traits of the commander made a significant difference in the final campaign results or if there were other factors that were more important in determining the results. However, the evidence within chapters 3-5 strongly suggests that the traits of the operational commanders influenced their respective decision-making processes and were key factors in achieving operational success.

Although there appear to be common traits among the commanders within the three case studies, this does not imply that a given commander is a genius nor that another commander with similar traits is by definition a genius. This assertion is supported by a conclusion of Dr Ralph Stogdill, who was a social scientist which examined 120 trait studies during a 1948 analysis at

Ohio State University, “A person does not become a leader by virtue of the possession of some combination of traits...but the pattern of personal characteristics of the leader must bear some relevant relationship to the characteristics, activities, and goals of the followers.”⁴⁹⁵

However, Clausewitz suggested that “Genius consists in a harmonious combination of elements, in which one or the other may predominate, but none may be in conflict with the rest.”⁴⁹⁶ This notion suggests that there is some combination of elements that are applicable to a given commander in a given situation. The general military situation of this study has been air command at the operational level of war during WW II. The importance of defining a specific and historical context cannot be over emphasized, as not defining these parameters has been one of the shortcomings of leadership studies in general.

Employing factor analysis to quantify leadership and focusing so minutely on the qualities of leadership, the field repeatedly loses sight of one of the principal reasons for its subject's essentially unpredictable nature--the environment in which leaders function. Or to put it another way, leadership studies lack an adequate concern for context, historic or situational.⁴⁹⁷

The situational and historical context of the decisions of the three commanders of this study have been addressed with this potential shortcoming in mind. The next chapter addresses the conclusions of this study.

⁴⁹³ Julian S. Corbett, Some Principles of Maritime Strategy (Annapolis, Md.: United States Naval Institute, 1988), 3.

⁴⁹⁴ This method of classifying airpower application is developed by Lt Col Mark Clodfelter in his book The Limits of Airpower (New York: The Free Press, 1989). See Page 17.

⁴⁹⁵ Alan Brinkley, Alan Ryan and Jacob Heilbrunn, “Questioning Leadership,” The Wilson Quarterly 18, no. 2 (Spring 1994), 68.

⁴⁹⁶ Clausewitz, 100.

⁴⁹⁷ Brinkley, et al, 70.

Chapter 7 Conclusions and Implications

Conclusions

Based upon the established criteria of this study, traits have been identified as possible elements of genius for air commanders at the operational level of war within the cognitive, moral, and physical spheres. Within the cognitive sphere the possible traits are an ability to work outside the rules, an ability to work in concert with other commanders of other services, *coup d'oeil*, objectivity, knowledge of the capabilities of one's people and material resources, superior intelligence, a sensitive and discriminating judgment, adoption of air *Aufstragtaktik* using mission-type orders, and presence of mind. In the moral sphere the possible traits include: moral courage, determination, strength of character, firmness, energy to motivate one's people, and staunchness. Lastly, within the physical sphere, a commander must have a physical ability to withstand the stress and demands of command.

The situational and historical context of the cases within this study also define the limits of any conclusions. First, situations were chosen whereby air commanders achieved significant results with limited resources. The criterion of having limited resources tended to limit the effect of mere luck accounting for a commander's success. Each situation was an examination of the decisions made by air commanders at the operational level of war during a campaign in WWII. Also, each campaign started with the enemy taking the initiative. Hence, at least part of each campaign was fought from a defensive perspective.

A comparison of the possible moral and physical elements of genius for surface and air command at the operational level of war indicates a nearly identical overlap. The only notable difference is that the air commander is less likely to display personal courage. This convergence is not so complete within the cognitive sphere.

The largest divergence between possible elements of genius for surface and air command at the operational level occurs within the cognitive sphere. With the exception of the employment of air *Aufstragtaktik*, the key differences are measured in degree for some of the

variables. The air commander seems to need a presence of mind and a *coup d'oeil* that is capable of evaluating more variables in less time than his surface counterpart. The consequences of an air commander failing to demonstrate an adequate presence of mind or *coup d'oeil* can be lethal. Much of the complexity and lethality of airpower applications and considerations is driven by changes in technology. Radar shifted chance in the favor of Fighter Command. SCUD missiles changed the operational level air commander's calculus during the Gulf War. What will be the role of tactical nuclear weapons under the control of radical leaders or non-state actors tomorrow? One thing is certain: the operational level air commander of tomorrow can expect technological change to alter his calculus. Today's solutions and advantages will not provide answers for tomorrow's threats. An air commander's presence of mind and *coup d'oeil* will face critical challenges.

The air commander faces a greater challenge than his surface counterpart that is related to these cognitive traits--an ability to work in concert with commanders of other services. Again, due to the greater number of options available to an air commander at the operational level, he will face a greater challenge to first, select an appropriate airpower option and then convince other commanders of that choice. First, he must determine the enemy centers of gravity (COGs) and then decide if a form of airpower can influence the COG appropriately. Second, he must know his own COGs, and decide if airpower can protect them. All of this analysis must be accomplished in light of strategic context and tactical realities. In brief, this trait includes an ability to know the appropriate role of airpower in a given campaign and to convince other commanders as to what that role should be. This decision or choice also includes not using airpower if that is appropriate.

The commanders examined in this study chose to use a form of air *Auftragstaktik*, and this was critical for the success of airpower applications. The use of this technique allowed subordinate commanders the capability to exploit the inherent flexibility of airpower. In short, subordinate commanders were able to concentrate forces rapidly against enemy targets as the situation dictated. Clearly, an Air Tasking Order that exceeds 100 pages seems to go beyond

explaining a commander's intent. Although mission-type orders may or may not be appropriate for today's air commanders, perhaps there is a compromise that can work to regain the inherent flexibility of airpower.

In two of the three analyzed commanders, a longing for honor or glory were clearly not the source of their motivation. Does this indicate another difference with the theory for surface warfare genius? Perhaps, but just because a commander exhibits or practices deliberate modesty, does not mean that he is not driven by a personal desire to achieve excellence. This subtle difference could be that a modest commander simply chooses not to reveal his inner feelings or drive, but it may still exist in a different form. The commander who is deliberately modest, may still have a longing for a “personal glory” as opposed to external recognition.

Dowding, Spruance, and Kenney prepared for command at the operational level of war from experience and study. Dowding gained at least part of his knowledge from his job as the Commander of Fighter Command for the four years before the Battle of Britain. Spruance taught strategy and studied the Japanese Navy at the US Naval War College. He also had experience as a naval surface commander before he took command at the Battle of Midway. Lastly, Kenney gained experience in his assignments that helped prepare him for command of Fifth Air Force. He had experience in logistics, supply, weapons engineering, attack aviation, and command before his assignment to the Southwest Pacific.

Relevance of the Study and its Conclusions

How has the air command environment at the operational level of war changed since WWII? Considering Dr Winton's operational paradigm, a number of factors have changed for the operational level air commander. Time has been further compressed for the decision-making process. Technology has developed resources that have compressed the time available to a commander to make a decision. A related issue that compresses a commander's available time is the employment of parallel warfare as opposed to sequential warfare that generally was the typical situation encountered during WWII.

Space has been enlarged in a number of dimensions largely as a result of technological advancements. First, satellites have expanded a commander's space as he ponders the estimate of any given situation. He must consider actions to counter enemy satellites as well as surface and air threats. A commander must absolutely understand and exploit the electromagnetic spectrum within his space in a much more sophisticated manner than during WWII. The use of cruise missiles also complicates both offensive and defensive considerations.

In terms of force, the commander of today is concerned with the proliferation of weapons of mass destruction. Having a nuclear warhead launched at one's forces or at an ally are a very real threat today. More countries, and non-state actors will have access to such weapons in the future. Unlike the commanders of WWII, today's commanders face greater and more lethal forces, and the enemy or entity that controls those forces may not be known.

Both tactical realities and strategic context are driven by a tremendous wealth of dynamic information. Satellites provide real-time world-wide communication. The commanders of today have to sort through more information and getting overloaded is a real possibility. Nonetheless, commanders must be prepared to make timely decisions in spite of having to digest the abundance of information.

Today's operational level air commander is a major factor in the planning and execution of the operational art. The Joint Forces Air Component Commander (JFACC) concept is alive and well. Training courses are being designed to help prepare this commander for the challenges he will face. He will make decisions that will determine victory or defeat. Today's JFACC may even help define victory and defeat. The Goldwater-Nichols Act will have an impact on how the JFACC operates. He will operate in a joint environment, with commanders of other services.

Implications

Airmen and future air commanders have two things to learn from this study. First, they have more reason to prepare themselves within the cognitive domain than a comparable surface commander. Second, they must continue to strive and understand the moral elements of genius as they continue to play a key role in operational warfare, even for high technology airpower

enthusiasts. One method of gaining insight into an appreciation of the moral elements of the genius of war, is to study history, as these traits seem to be applicable across mediums and time. Clausewitz recognized this during the 19th Century when he said

History provides the strongest proof of the importance of moral factors and their often incredible effect: this is the noblest and most solid nourishment that the mind of a general may draw from a study of the past....it should be noted that the seeds of wisdom that are to bear fruit in the intellect are sown less by critical studies and learned monographs than by insights, broad impressions, and flashes of intuition.⁴⁹⁸

So what options do future operational level air commanders have to acquire a genius for operational level air command? There are four alternatives. First, a given commander could be born with some of the required talents. Second, a commander could be blessed with good luck. Thirdly, an officer could acquire this genius for air command by assimilating knowledge from appropriate job experiences, as in grooming a chosen officer to broaden his experience base. Lastly, an officer could assimilate attributes of genius through study and reflection. This final process requires further elaboration.

There are a number of options available to a future operational level air commander to develop elements of genius by study and reflection. An obvious solution is to develop a disciplined method of personal self study. However, there needs to be more to one's education than mere study. Perhaps the essence of military education is tied to the theory of war in general. According to Clausewitz, "Theory exists so that one need not start afresh each time sorting out the material and plowing through it...It is meant to educate the mind of the future commander, or, more accurately, to guide him in his self education, not to accompany him to the battlefield..."⁴⁹⁹ "Henry Ford saw education in broad terms, as encompassing a person's total experience. This meant more than reading a book, it implied observation, sensory perception, personal reactions, and individual involvement."⁵⁰⁰ Nonetheless, disciplined study is a valid and worthwhile starting point especially when an officer interacts with other officers to discuss operational level issues.

To be sure, an officer can express ideas, exchange views and grow during academic pursuits at the Air University or at a sister service school. Although these interactions do take place at SOS, ACSC, and at the War College, a relatively new school in its third year, SAAS, educates officers to be future air strategists. The students are placed in an academic environment and encouraged to participate in daily rigorous debates on airpower issues of the past, present, and future. The newest DOD school that can help educate tomorrow's operational level air commanders is the School of Information Warfare and Strategy at Fort McNair in Washington D.C. The school is designed to match information technology with military strategy and national security requirements. Officers assigned to the school will spend 10 months studying how to leverage information technology and incorporate information into military strategy at all levels of conflict.⁵⁰¹ Each of these academic experiences serve to stimulate the thinking of future operational level air commanders and supporting staffs.

Another part of one's study should include information and ideas gained from simply 'listening' to one's subordinates. Today the DOD has institutionalized Total Quality Leadership and one of the tenets of this philosophy is that good ideas can come from anyone. How a given commander chooses to implement this philosophy can have a tremendous impact on its success. It may be that a team approach is a way to achieve military genius. Henry Ford applied this technique to automobile manufacturing. "Thus innumerable inventive-minded men were involved in the creation of the Model T and its system of mass production....Perhaps Ford best represented the team approach rather than the achievements of a genius working alone."⁵⁰²

All study must be accompanied by an appropriate amount of time specifically for reflection. This is a cognitive act in which one thinks about the education, experience, and study in its strategic, operational and tactical implications. This point is significant because Henry Ford warned us that "...people did little reflective thinking; they let others arrange their indignations for them."⁵⁰³ If they are to succeed, future operational level air commanders must not be a member of that group.

In conclusion, there is a genius for air command at the operational level of war. There are elements or traits of this genius type and these characteristics can be enhanced. As Dr Alfred Goldberg has so cogently observed, "...the human dimension is ultimately the *deus ex machina* of warfare, and we cannot understand war if we simply view it as the play of great impersonal forces in which men are beings without free will. It is important for any society to inquire into what manner of men are those who lead them in warfare."⁵⁰⁴

⁴⁹⁸ Carl von Clausewitz, On War, ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1984), 185

⁴⁹⁹ Ibid., 141.

⁵⁰⁰ Reynold M. Wik, Henry Ford and Grass-roots America (Norwalk, Connecticut: The Easton Press, 1972), 206.

⁵⁰¹ William, Matthews, "New School to Focus on Information Warfare," Air Force Times, (16 May, 1994), 37.

⁵⁰² Wik, 239.

⁵⁰³ Ibid., 196.

⁵⁰⁴ Dr Alfred Goldberg, "Airmen at War," Air University Review 23 (March-April 1972): 83.

APPENDIX A

British Fighter Squadrons: Order of Battle

8 July 1940

Number 10 Group

<u>Squadron</u>	<u>Location</u>	<u>Type of Aircraft</u>
87	Exeter	Hurricane
213	Exeter	Hurricane
92	Pembrey	Spitfire
234	Saint Eval	Spitfire

Number 11 Group

<u>Squadron</u>	<u>Location</u>	<u>Type of Aircraft</u>
43	Tangmere	Hurricane
145	Tangmere	Hurricane
601	Tangmere	Hurricane
Fighter Interception Unit	Tangmere	Blenheim
64	Kenley	Spitfire
615	Kenley	Hurricane
245	Hawkinge	Hurricane
111	Croydon	Hurricane
501	Croydon	Hurricane
600	Manston	Blenheim
79	Biggin Hill	Hurricane
610	Gravesend	Spitfire
32	Biggin Hill	Hurricane
54	Rochford	Spitfire
65	Hornchurch	Spitfire
74	Hornchurch	Spitfire
56	North Weald	Hurricane
25	Martlesham	Blenheim
151	North Weald	Hurricane
1	Northolt	Hurricane
604	Northolt	Blenheim
609	Northolt	Spitfire
236	Middle Wallop	Blenheim

APPENDIX A (Continued)

Number 12 Group

<u>Squadron</u>	<u>Location</u>	<u>Type of Aircraft</u>
19	Duxford	Spitfire
264	Duxford	Defiant
85	Debden	Hurricane
17	Debden	Hurricane
29	Digby	Blenheim
611	Digby	Spitfire
46	Digby	Hurricane
23	Wittering	Blenheim
266	Wittering	Spitfire
229	Wittering	Hurricane
66	Coltishall	spitfire
253	Kirton-in-Lindsey	Hurricane
222	Kirton-in-Lindsey	Spitfire

Number 13 Group

<u>Squadron</u>	<u>Location</u>	<u>Type of Aircraft</u>
41	Catterick	Spitfire
219	Catterick	Blenheim
152	Acklington	Spitfire
72	Acklington	Spitfire
249	Leconfield	Hurricane
616	Leconfield	Spitfire
603 "A"	Turnhouse	Spitfire
141	Turnhouse	Defiant
602	Drem	Spitfire
603 "B"	Montrose	Spitfire
3	Wick	Hurricane
504	Wick	Hurricane

Source: Sir Air Chief Marshal Hugh Dowding, "The Battle of Britain," Supplement to the London Gazette, 11 September, 1946, Reprint of original letter from Dowding to the Air Ministry, 20 August, 1941 (Maxwell AFB, Ala.: USAF/HRA), Appendix A, 4554, 4560-4561.

Note: The first-line strength of each squadron had 16 aircraft of which not more than 12 were intended to be operationally ready at any given time for duty. The other four were normally undergoing inspection or overhaul.

APPENDIX B

RAF Battle Losses 1 July-31 October 1940

Cumulative Totals at dates shown

<u>Date</u>	<u>Bombers</u>	<u>Fighters</u>	<u>Other Types</u>	<u>Total</u>
July 1	358	517	104	979
July 11	386	565	108	1059
July 18	396	588	112	1096
July 25	413	623	116	1152
August 1	435	650	120	1205
August 8	448	685	128	1261
August 15	487	807	137	1431
August 22	510	897	145	1552
August 29	534	1017	147	1698
September 5	563	1184	153	1900
September 12	595	1293	161	2049
September 19	611	1362	164	2137
September 26	624	1406	169	2199
October 3	648	1488	178	2314
October 10	661	1537	184	2382
October 17	689	1587	189	2465
October 24	701	1607	190	2498
October 31	725	1657	200	2582
Grand Totals	367	1140	96	1603

Source: Wood and Dempster, 350.

APPENDIX B (Continued)

***Luftwaffe* Battle Losses
1 July-31 October 1940**

<u>Type Aircraft</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>Totals</u>
Close Recce	0	2	1	4	7
Long-Range Recce	26	16	19	13	74
Single Engine Ftr	46	211	220	123	600
Twin Engine Ftr	20	120	83	12	235
Night Fighters	0	2	2	14	18
Bombers	93	228	230	142	693
Dive Bombers	16	51	2	0	69
Ground Attack	1	0	0	0	1
Transport	1	3	0	1	5
Coastal	14	30	23	16	83
Miscellaneous	1	1	2	0	4

Source: From statistics compiled from original records kept by the Quartermaster General's Department of the German Air Ministry. Quoted in Wood and Dempster, 353.

APPENDIX C

JAPANESE FORCES ALLOCATED TO THE BATTLE OF MIDWAY

MOBILE FORCE (1st Air Fleet)

(A) Air Attack Group

Carrier Division 1	(<i>Akagi, Kaga</i>)	2 Attack Carriers
Carrier Division 2	(<i>Soryu, Hiryu</i>)	2 Attack Carriers

(B) Supporting Group

Cruiser Division 8	(<i>Tone, Chikuma</i>)	2 Heavy Cruisers
Battleship Division 3 (2nd Section)	(<i>Haruna, Kirishima</i>)	2 Battleships

(C) Screening Group

Destroyer Squadron 10	(<i>Nagara</i>)	1 Light Cruiser
Destroyer Division 10	(<i>Kazagumo, Yugumo, Makigumo, Akigumo</i>)	4 Destroyers
Destroyer Division 17	(<i>Osokaze, Urakaze, Hamakaze, Tanikaze</i>)	4 Destroyers
Destroyer Division 4	(<i>Nowaki, Arashi, Hagikaze, Maikaze</i>)	4 Destroyers

(D) Supply Group

(<i>Nichiro Maru, Kyoei Maru</i>)	2 Fleet Oilers
(<i>Hoko, Maru</i>)	1 AV Gas Tanker

MAIN FORCE

(A) Main Group

Battleship Division	(<i>Yamato, Mutsu, Nagato</i>)	3 Battleships
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(B) Aleutians Support Group

Battleship Division 2	(<i>Ise, Hyuga, Fuso, Yamashiro</i>)	4 Battleships
	(<i>Zuiho</i>)	1 Light Carrier
Cruiser Division 9	(<i>Kitagami, Oi</i>)	2 Light Cruisers
Destroyer Squadron 3	(<i>Sendai</i>)	1 Light Cruiser
Destroyer Division 11	(<i>Fubuki, Shirayuki, Hatsuyuki</i>)	3 Destroyers
Destroyer Division 12	(<i>Shirakumo, Shinonome, Usugumo, Murakumo</i>)	4 Destroyers
Destroyer Division 19	(<i>Isonami, Shikinami, Ayanami, Uranami</i>)	4 Destroyers
Destroyer Division 20	(<i>Amagiri, Asagiri, Yugiri, Sagiri</i>)	4 Destroyers

(C) Supply Group

(<i>Sacramento Maru</i>)	1 AV Gas Tanker
(<i>Naruto Maru, Toei Maru, Tora Maru</i>)	3 Fleet Oilers

APPENDIX C (Continued)

INVASION FORCE (Occupation Force: 2nd Fleet)

(A) 2nd Fleet Group

Battleship Division 3 (1st Section)	<i>(Kongo, Hiei)</i>	2 Battleships
Cruiser Division 4 (1st Section)	<i>(Atago, Chokai)</i>	2 Heavy Cruisers
Cruiser Division 5	<i>(Haguro, Myoko)</i>	2 Heavy Cruisers
Destroyer Squadron 4	<i>(Yuri)</i>	1 Light Cruiser
Destroyer Division 2	<i>(Yudachi, Murasame, Harusame, Samidare)</i>	4 Destroyers
Destroyer Division 9	<i>(Asagumo, Minegumo, Natsugumo)</i>	3 Destroyers
3 Supply Ships		3 AV Gas/Oilers

(B) Transport Group

<i>(Nankai Maru, Zenyo Maru, Brazil Maru, Argentina Maru, Azuma Karu, Kirishima Maru, Kano Maru, #2 Toa Maru, Akebono Maru, Hokuriku Maru,)</i>	10 Cargo Transport & AV Gas/Oilers
<i>(Goshu Maru, Keiyo Maru)</i>	2 Troop Transports
<i>(Seicho)</i>	1 Light Cruiser

Close Screen

Destroyer Squadron 2	<i>(Jintsu)</i>	1 Light Cruiser
Destroyer Division 15	<i>(Kuroshio, Oyashio, Natsushio)</i>	3 Destroyers
Destroyer Division 16	<i>(Hatsukaze, Yukikaze, Amatsukaze, Tokitsukaze)</i>	4 Destroyers
Destroyer Division 18	<i>(Kasumi, Arare, Kagero, Shirayuki)</i>	4 Destroyers
3 Patrol Boats		

(C) Close Support Group

Cruiser Division 7	<i>(Kumano, Suzuya, Mogami, Mikumo)</i>	4 Heavy Cruisers
Destroyer Division 8	<i>(Arashio, Asashio, Oshio, Michishio)</i>	4 Destroyers

(D) Seaplane Tender Group

Seaplane Tender Division 11	<i>(Chitose, Kamikawa Maru)</i>	2 Seaplane Tenders
Destroyer	<i>(Hayashio)</i>	1 Destroyer
Patrol Boat # 35		

(E) Minesweeper Group

Minesweeper Division 16	<i>(Tama Maru 3,5; Showa Maru 7,8; Meiyo Maru, Yamafuku Maru)</i>	6 Minesweepers
Submarine Chasers 4-6		3 Submarine Chasers

APPENDIX C (Continued)

SUBMARINE FORCE

(A) Midway Submarine Force

Submarine Squadron 3	(I-168, 169, 171, 174, 175)	5 Submarines
Submarine Squadron 5	(I-156, 157, 158, 159, 164, 165, 166)	7 Submarines
Submarine Division 13	(I-121, 122, 123)	3 Submarines

Source: “The Battle of Midway Including the Aleutian Phase: June 3 to June 14, 1942,” Unpublished strategical and tactical analysis. (Newport, R.I.: US Naval War College, Naval Historical Collection, 1948), Appendix 1, i-iii, NAVPERS 91067.

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